
INPUT

VENDOR ANALYSIS
PROGRAM



Vendor Profile

A Publication from INPUT's Vendor Analysis Program – U.S.

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MCI Systemhouse Inc.

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Status:	Subsidiary
Parent:	MCI Communications Corporation
Employees:	6,500+ (10/96)
Revenue:	\$1,000,000,000
Fiscal Year End:	12/31/95

Key Points

- MCI Systemhouse is MCI's global systems integration and outsourcing company. Its focus is to deliver complete transformational outsourcing services to clients moving their information technology systems towards a client/server architecture by providing systems integration and consulting, systems

operations/outsourcing, and technology deployment.

- MCI acquired SHL Systemhouse in November 1995 for approximately \$1 billion. The U.S. operations of Systemhouse have been renamed MCI Systemhouse. In Canada and internationally the company continues to operate as SHL Systemhouse.
- While Systemhouse continues to operate as a standalone company, it is now headed by MCI's Scott Ross, who was named president and chief operating officer in March 1996, filling the position left open

when John Oltman, Systemhouse's former president, resigned.

- In September 1996, the company announced networkMCI Enterprise Management, a service offering whereby MCI will build, manage, and maintain networks of desktop computers for a flat annual fee per employee, at a rate far less than business clients spend.
- Systemhouse has invested in Year 2000 software development firm, Cogni-CASE, Inc.
- Technology acquired with SECA, Inc., in early 1996 has added a practitioner workbench capability to the company's SHL TRANSFORM™ process management and methodology product.
- The company has recently opened the MCI Systemhouse Napa Valley Outsourcing Center in Northern California to support growth in the high tech segment.
- Recent major contract awards include a \$200 million outsourcing contract with Apple Computer, a \$120 million (\$ Cdn.) technology deployment contract with Ontario Hydro, and a \$50 million transformational outsourcing contract with Eagle Foods.

Company Description

Systemhouse provides systems integration and consulting, outsourcing and systems operations, and technology deployment services to commercial and public sector/government clients in North and South America, Europe, and Asia.

- Systems integration and consulting includes Systemhouse's core transformational services—the planning, design, and implementation of

client/server architectures and open systems.

- Outsourcing encompasses Systemhouse's transformational outsourcing services. Contracts are managed through seven outsourcing centers in Canada, the U.S., and the U.K.
- Technology deployment includes the configuration, installation, procurement, and support of advanced workstations, LANs, mobile computing, and related training services.
- Systemhouse's areas of vertical market expertise include postal systems development, public safety remote dispatching systems, retail point-of-sale systems, energy, insurance, banking and finance, entertainment, telecommunications, geographical information systems, process management, and manufacturing.

SHL Systemhouse, founded in 1974, operated as a public company until it was acquired by MCI in November 1995.

- MCI acquired SHL for approximately \$1 billion, or \$13 per share (\$U.S.).
- MCI's existing professional services organization, which provided various network management services and consisted of less than 100 employees, has been combined with Systemhouse.
- The U.S. operations of SHL Systemhouse were renamed MCI Systemhouse in September 1996. The company continues to operate as SHL Systemhouse in Canada and internationally.
- MCI, headquartered in Washington, D.C., is a leading diversified communications

company. With 1995 revenue of \$15.3 billion and more than 45,000 employees, MCI offers consumers and businesses a range of services, including long distance, wireless, local access, paging, Internet software and access, information services, outsourcing, business software, and advanced global telecommunications services.

Structure and Operations

The company's current key executives are listed below.

Systemhouse Key Executives

Name	Position
Scott B. Ross	President and COO
Alan Bernstein	EVP, Vertical Markets
Gregory Jacobsen	EVP, Business Strategy and Marketing
William W. Linton	EVP and CFO
Barbara Iman	VP, Human Resources
James C. Madden	President, U.S.
Ian McLaren	President, Canada
Michael W.D. Hubbert	President, Europe
Jean-Pierre Soubliere	President, International
William F. Trafford	President, Global Delivery and Technology

Recently Systemhouse was realigned to enhance customer service. The primary benefit of the move is that customers now have a single point of contact regardless of whether their needs involve systems integration, outsourcing, technology deployment, or a combination of the above services. The new organization is comprised of Canadian, U.S., U.K./Europe, and International operations.

The primary business services of Transformational Services, Outsourcing, and Technology Deployment still exist, but the geographic reorganization has eliminated the line of business structure to ensure customers receive a seamless approach to solution development.

Systemhouse has 120 offices worldwide. Major operations are as follows:

- *Canadian* offices are in six regions—Atlantic (Halifax and Fredericton), Quebec (Quebec City and Montreal offices), (Toronto office) Central Canada (Toronto), Ottawa (Ottawa office), Western (Winnipeg, Regina, Calgary, and Edmonton offices), and Pacific (Vancouver and Victoria offices).
- *U.S.* offices are in six regions—Northeast (New York and Boston offices), Mid-Atlantic (Reston, Cary, and Orlando offices), Central (Dallas, Houston, Austin, and Boulder offices), Midwest (Chicago office), Pacific (Los Angeles and San Francisco offices), and National Systems (Baltimore and Sacramento offices).
- *European* offices in the U.K. are in London, Beeston (Nottingham), Camberley (Surrey), Finchampstead (Berkshire), and Salford. Other offices are in Geneva (Switzerland) and The Hague (Netherlands).
- *International* operations outside Canada, the U.S., and Europe include the following:
 - MCI Systemhouse de Mexico S.A. de C.V. has an office in Mexico City from which it conducts operations in Mexico.

- MCI Systemhouse de Sur America, C.A. has an office in Caracas from which it conducts business locally.
- MCI, in conjunction with the Tong Yang Group of Companies, conducts business in South Korea from an existing office in Seoul.

Company Mission

The mission of MCI Systemhouse is to become the undisputed leader in sales and marketing of the most innovative information technology solutions by providing real benefits from converging technologies, and outstanding service and satisfaction to clients worldwide.

Company Strategy

MCI Systemhouse and its parent company, MCI, are positioning to serve corporate needs resulting from the convergence of computing and communications. These would include fast-growth markets such as network-based services, network management outsourcing, and MCI Systemhouse's traditional area of expertise—client/server computing.

MCI Systemhouse's focus will continue to be the delivery of transformational outsourcing services for clients moving their information technology systems towards client/server architecture. Components of transformational outsourcing include systems integration and consulting, systems operations and outsourcing, and technology deployment.

Elements of the company's strategy include:

- Forging long-term, value-added partnerships with its clients
- Committing to its object-oriented approach to software development in support of business process reengineering
- Implementing the SHL TRANSFORM object-oriented methodology within the MCI Systemhouse organization as well as for client projects
- Positioning for high-growth network management market, leveraging MCI's communications strengths; expanding offerings to include Internet and intranet solutions
- Strengthening and expanding its process reengineering, education, and training services to complement its other service offerings
- Focusing on leveraging repeatable solutions through the Global Development Centre, located in Ottawa (Canada). This is a group of approximately 80 employees that operates in a virtual development environment as a source of best practices and solutions, enabling delivery of customized solutions more quickly to clients.
- Continuing international expansion in the Far East and Latin America through partnering with local or national firms on a non-financial risk basis.

Financials

MCI Systemhouse's calendar 1995 revenue was approximately \$1 billion (\$U.S.), up from revenue of \$870 million (\$U.S.) for the fiscal year ending August 31, 1994.

- For 1995, MCI reported information technology revenue of \$135 million, which includes SHL revenue from the date of its acquisition on November 17, 1995 and full-year revenue from MCI's existing

professional services organization. This figure does not include approximately \$1.2 billion in Data Services revenue.

- It is anticipated that Systemhouse's 1996 revenue will exceed \$1.4 billion. Contract backlog is \$2 billion.

Interim Results

MCI has reported that for the six months ending June 30, 1996, revenue from information technology (MCI Systemhouse) reached approximately \$650 million.

Revenue Analysis by Product/Service

INPUT estimates Systemhouse's 1995 revenue was derived approximately as follows:

**MCI Systemhouse
1995 Source of Revenue**

Service	Revenue (\$ Millions, U.S.)	Percent of Total
Systems Integration and Consulting	\$500	50%
Systems Operations and Outsourcing	200	20%
Technology Deployment	300	30%
Total	\$1,000	100%

Market Financials

Systemhouse provides its systems integration and outsourcing services to government and commercial organizations.

- In Canada, Systemhouse customers come from a range of industrial, commercial, and government sectors, including financial services, resources, utilities, wholesale/retail, transportation, manufacturing, communications and

municipal, provincial, and federal government.

- In the U.S., Systemhouse customers include telecommunications manufacturers and services providers, transportation, retail, and financial services organizations, and federal, state, and local government agencies.
- In Europe, clients include government agencies and commercial organizations.

Systemhouse's target markets for its services are in the application areas of postal, telecommunications, public safety, energy, human services, insurance, financial services, and logistics (focusing on retailing, manufacturing, and consumer products).

Geographic Markets

INPUT estimates approximately 50% of 1995 revenue was derived from Canada, more than 25% from the U.S., and the remaining 25% from Europe and other international sources.

Acquisitions/Joint Ventures

In June 1996, Systemhouse acquired 45% of the voting shares of Cogni-CASE, Inc. (CCI), a Montreal-based firm specializing in computer reengineering.

- CCI is most noted for its development of Cogni-2000™, a software tool to help automate the conversion of central processing system date-and-time stamp files for the year 2000.
- The deal includes a license agreement for MCI Systemhouse to use CCI's tools for Year 2000 projects.
- The partnership forms part of MCI Systemhouse's global strategy to become a

leading force in the implementation of Year 2000 conversion solutions.

- With the acquired interest in CCI, a Year 2000 practice has been established in Montreal and there are plans for additional locations in the U.S. and abroad.

In April 1996, Systemhouse acquired SECA, Inc. of Blue Bell (PA). SECA is a process management and methodology vendor. Its key product is SE Companion™, a process management tool.

- The acquisition adds a "practitioner workbench" capability to SHL TRANSFORM, the company's process management and methodology product.
- Systemhouse has integrated SE Companion into SHL TRANSFORM to enhance the functionality and strengths of the product set. It is targeted at system practitioners, project managers, methodologists, and users.
- SECA had 12 employees at the time of the acquisition. The operations of SECA have been merged into Systemhouse's Online Knowledge Group.

In March 1995, Systemhouse established a joint venture company with Mitsui Engineering & Shipbuilding Co. and Mitsui & Co, Ltd. to pursue client/server-related systems integration and outsourcing opportunities in Japan

Divestitures

In the first quarter of fiscal 1995, Systemhouse divested two business units as part of a program to reduce operating losses outside of North America while focusing on client/server-driven businesses. Proceeds of the sales less costs and quarterly operating

losses associated with the two units totaled \$30.0 million. Divestitures included:

- A technology deployment unit in Mexico
- A credit card processing software business in the U.K.

Employees

As of December 31, 1995, Systemhouse had approximately 5,500 employees.

The company currently has approximately 6,500 employees worldwide.

Key Products and Services

Within Systemhouse's transformational outsourcing framework, the company's operations are directed along three lines of business:

- Systems Integration and Consulting focuses on implementing client/server architectures and open systems for a worldwide clientele. Systemhouse's resources are united in this area by its proprietary methodology, SHL TRANSFORM, which is used to develop and implement all systems integration projects.
- Technology Deployment makes use of Systemhouse's expertise in advanced open systems technologies—from local-area networks and workstations to wide-area networks—to provide education and training, technology configuration and distribution, as well as maintenance and help services in support of system reconfigurations.
- Outsourcing is supported through outsourcing centers in Halifax, Ottawa, Calgary, Dallas, Los Angeles, Napa Valley (CA), and London; and a wide-area telecommunications network.

In September 1996, Systemhouse announced a new service, networkMCI Enterprise Management, which will help companies build, manage, and support their distributed networks.

- The service, targeted at mid-sized businesses with 50 to 1,000 desktop computers in as many as 10 locations, combines Systemhouse's information technology expertise with MCI's experience in virtual data and network services.
- This single source solution includes hardware, software, network, service, and support components.
- MCI has partnered with Microsoft, Compaq, and Cisco to support these capabilities.
- The service has a flat monthly price of \$225 per end user, including hardware, software, network, management, and support.
- The service will be marketed in the U.S. by MCI's national sales force located in more than 300 cities.

Systemhouse's base of business has shifted from short-term contracts with higher risk profiles to long-term contracts with higher profit profiles.

Systems integration contract examples include the following:

- A 13-month contract with the state of Mississippi's Department of Transportation to develop a client/server-based transportation management information system
- A \$42.8 million contract with the County Council of Northampton County (PA) to build and operate North America's first privatized Enhanced 911 (E-911) system, including a new dispatch center. Systemhouse's Transerve™ brand of public and private safety solutions include emergency dispatching, outsourcing, imaging, siting and simulation, mobile computing, consulting, and message switching, and records management.
- A multimillion dollar contract to implement client/server systems supporting the Australian Taxation Office's (ATO) adoption of an automated data capture system. In addition to its work with ATO, Systemhouse provides systems and software for automated data capture in tax processing to the Government of Mexico's Ministry of Finance, and to Grumman Data Systems for use in the State of Mississippi and the State of Florida tax departments.
- A five-year contract valued at \$150 million, whereby Systemhouse is acting as a primary contractor for the Department of National Defence to upgrade the Canadian Forces' 20-year-old inventory management and supply system. Subcontractors include Sun Microsystems of Canada, MacDonald Dettwiler, and several small and medium-sized Canadian firms.
- Deploying a customized trading system (jointly developed with Phibro) and providing business process reengineering and training support in object-oriented technologies for PEMEX, Mexico's national oil company, under a three-year, multimillion dollar contract
- Providing a statewide Child Support Enforcement system to the State of

Louisiana Department of Social Services under a \$6.8 to \$7.8 million contract. The system is based on a contract that was originally developed by MCI for Kansas. In addition to Louisiana and Kansas, there are 11 states and the District of Columbia using MCI systems to automate their human services administration.

- A five-year contract with Browning-Ferris Industries (BFI) for the Application Systems and Development and Support group within BFI's MIS Department. MCI is responsible for development and maintenance of more than 40 application systems.
- A contract for the first phase design of a \$250 million Income Security Programs Redesign for Health and Welfare Canada
- Assisting with business process and systems reengineering to streamline the Washington Post's circulation, production, and advertising operations
- Developing an object-oriented prototype to service the customer care needs of MCI's high-volume long-distance accounts.
- Providing business systems integration services together with IBM Canada Ltd. for Husky Oil, Ltd.
- Acting as prime contractor and systems integrator to replace Transport Canada's financial and inventory control systems under a contract valued at more than \$60 million
- Implementing a client/server computing platform to support Metropolitan Stevedore Company's operations at the Ports of Los Angeles and San Francisco and Metropolitan's headquarters in Wilmington

- Providing and operating a tracking, tracing, and inquiry service of postal mail for the U.S. Postal Service under an 11-year, \$270 million systems integration contract awarded in February 1991. The base contract, which covers the first five years of the agreement, is valued at \$128 million. The succeeding two option periods are expected to total \$142 million.

Recent systems operations contracts include the following:

- A seven-year, \$200 million outsourcing contract with Apple Computer (August 1996) to provide process, applications maintenance services, systems and network, engineering, telecommunications, and help desk services. As part of the contract, Systemhouse acquired Apple's Napa Valley (CA) data center.
- A five-year, \$50 million contract with Alberta Treasury Branches (ATB) to provide network services, including LAN, WAN, network systems management, help desk, software distribution, and asset supply and services in conjunction with a new banking support system to be deployed at 147 ATB branches across the province (September 1996)
- Providing information technology planning, UNIX outsourcing, and local-area network, desktop, help desk and telecommunications support to more than 3,100 users in 225 branch and lending offices throughout California for American Savings Bank under a five-year, multimillion dollar contract
- A ten-year, \$1 billion contract to assume responsibility for the Computing and Communications Utility of Canada Post Corporation

- A three-year, \$3 million contract with the U.K. Royal Automobile Club (RAC) to provide mainframe processing for the 5.7 million-member club's rescue program and 300,000 insurance policy customers of the club
- A five-year contract with Canadian investment banking and brokerage firm CIBC/Wood Gundy to manage, operate, maintain, support, and enhance CIBC/Wood Gundy's end-user computing environment—distributed PC LANs supporting the firm's trading floor, head office, and administrative operations. As part of the agreement, MCI has acquired 35 to 40 CIBC/Wood Gundy technology employees.
- A seven-year, multimillion dollar contract with Alberta Municipal Affairs to operate the information technology infrastructure to support the day-to-day operations of Alberta Registries and to help the department streamline and transform the delivery of registry services to Albertans
- A ten-year contract with The VONS Companies—a leading Southern Californian supermarket chain—to assume operational responsibility for VONS' information technology function while managing and executing the migration of existing systems to a client/server platform. MCI has acquired a significant majority of VONS' MIS staff in the transition process
- A five-year, \$27 million contract with Greyhound of Canada to provide various systems management functions, including operations, network management, application development, support, and help desk
- A five-year contract with Tupperware to assume responsibility for Tupperware's information technology function throughout North America while managing and executing a migration of all systems to a client/server computing platform. These systems include executive information, distribution and order processing, financial, and manufacturing.
- A five-year contract with petroleum refiner Ultramar Corp. to provide mainframe and midrange processing/support and application development and maintenance services. MCI will also consolidate Ultramar's IS operations to one location.
- A three-year transformational processing contract to manage National Education Corporation's mainframe computer systems, and network and project management support for a rightsizing project toward distributed computing
- A supercomputer processing and network operations contract with HPC High Performance Computing, a Canadian supercomputing consortium
- Computer systems outsourcing contracts valued at more than \$100 million over seven years with the privately-owned Maritime Telegraph & Telephone Company and the Government of Nova Scotia
- A five-year transformational outsourcing contract with Amoco Canada Petroleum Ltd., valued at \$70 to \$90 million, to provide all mainframe processing and data, voice, and radio network operations

A representative listing of recent SHL outsourcing contracts is shown in the exhibit.

Exhibit Representative MCI Systemhouse Outsourcing Contracts

Client	Industry	Award	Duration
Apple Computer, Inc.	Discrete Manufacturing	\$200 million	7 years
Eagle Food Centers	Retail	\$50 million	N/A
City of Gloucester	State and Local Government	N/A	3 years
FMC	Discrete Manufacturing	\$100 million	7 years
National Steel Corporation	Discrete Manufacturing	\$70 million	7 years
Northampton County, Pennsylvania	State and Local Government	\$47 million	10 years
Carl's Jr.	Retail	\$10 million	3 years
Royal Bank of Canada (U.K.)	Banking and Finance	\$5 million	3 years
Alberta Municipal Affairs Department*	State and Local Government	\$37 million	7 years
Greyhound of Canada*	Transportation	\$27 million	5 years
Canada Post*	Federal Government	\$1 billion	10 years
Mexican Finance Ministry (Mexico)	Federal Government	\$500 million	10 years
AMOCO Petroleum*	Process Manufacturing	\$90 million	5 years
Nova Scotia Government*	State and Local Government	\$50 million	7 years

Source: INPUT's Outsourcing Contracts Database

*Canadian outsourcing contracts

Technology deployment services provided by Systemhouse include marketing and support of third-party microcomputer hardware and software products for workstation-based networks, and related desktop systems management services to business, government, and education.

- The business involves assessing and defining customer requirements, recommending the best products and services, developing an effective implementation plan, pre- and post-delivery configuration; delivery, installation, and testing of the LAN-based products, initial training of customer personnel, and after-sale support in the form of remote systems management,

ongoing user training, product warranty, and maintenance services.

- Systemhouse is an authorized dealer for a range of hardware vendors, including IBM, Hewlett-Packard, Compaq, Apple, Sun, NEC, and Toshiba, among others, and obtains a variety of equipment from other suppliers to meet its customers' requirements.
- In September 1996, Systemhouse announced an agreement whereby Ontario Hydro, the province's public electric utility, will purchase desktop business computing products and services valued at \$120 million over the next three years.

- Systemhouse will employ its Technology Life Cycle Management™ (TLCM) Program to supply and provide related services for Intel-based desktop products from a variety of manufacturers.
- TLCM is a financial and physical asset management program developed by Systemhouse and designed to deliver a reduction in the life cycle cost of ownership of desktop business computing products.
- Other technology deployment clients include Canada Royal Bank, Candian Ministry of Transportation, and Metropolitan Life Insurance Company.

Software Products

MCI Systemhouse has developed several software products for custom projects that are now available for license. The products include:

- SHL TRANSFORM
- SHL VISION, an infrastructure management enabling software technology for managing the infrastructures of large organizations such as telecommunications and utilities companies and government agencies
- A trading system (developed for PEMEX)
- Project and Business Management System (developed for the Real Property Services Branch of Public Works and Government Services Canada)

Other

MCI Systemhouse LTD., with approximately 1,000 employees, provides systems integration and consulting services. Its subsidiaries—AST Trans-Act

Limited and MCI Technology Solutions Limited—provide systems operations and outsourcing services, and technology deployment, education and training services, respectively, to clients in the U.K.

Clients

Commercial clients, among others, include American Savings Bank, Apple Computer, Chase Manhattan Bank, Delta Airlines, Eagle Foods, FMC Corp., Levi-Strauss, Mattel/Fischer-Price, Rockwell International, Royal Automobile Club UK, Tupperware, VONS, and Yamaha Corp. of America.

Government clients include Alberta Registries, Canada Post, Department of National Defense, Dutch Post, Mississippi Department of Transportation, New York City Public Safety, and the U.S. Postal Service.

Marketing and Sales

Sales are conducted through a direct sales force. As previously mentioned, operations are organized along regional lines—Canada, U.S., U.K./Europe, and International.

MCI also markets its services to, and receives referrals from, its suppliers, especially hardware and software manufacturers.

Alliances

MCI's wholly owned and operated state of the art, global network is enhanced through strategic partnerships with MCI and BT (Conert), Stentor (Canada), and Avantel (Mexico) to provide seamless international coverage.

The IT expertise of Systemhouse is enhanced through strategic partnerships with Microsoft, Compaq, Cisco, Digital,

Marcam, Sun Microsystems, and Oracle to provide customers with best of breed applications.

Competitors

MCI Systemhouse's competitors, by delivery mode, are as follows:

- **Systems integration**—IBM, EDS, Computer Sciences Corporation (CSC), Andersen, and the major accounting firms
- **Outsourcing**—SHL's competitors in the outsourcing market vary depending on the country. Primary competitors in the U.S. include IBM (ISSC and IMS), EDS, CSC, and Andersen Consulting/GE Capital.
- **Technology deployment dealers** such as Crowntek Business Centres, Hamilton Group, and smaller microcomputer and local-area network vendors. In addition, MCI increasingly competes with ISM Information Systems Management, EDS of Canada Limited, Digital Equipment of Canada Limited, and with other domestic and foreign manufacturers that sell directly to the end user.

INPUT Assessment

MCI Systemhouse is diversifying away from over-dependence on the government sector which still supplies a significant portion of its revenues. The company has several retail contracts (VONS, Eagle Food Centers) and has strengthened its base in manufacturing.

As an MCI company, Systemhouse is now better positioned for the growing network management outsourcing market, and will be able to supplement its success in client/server and transformational outsourcing as network-centric computing gains momentum. This added competency

should boost future growth rates. Systemhouse's recent acquisition of SECA will be an added asset in process and project management.

Systemhouse is still dependent on Canada for much of its outsourcing business. However, the company will be able to diversify its geographic base more easily now that it can leverage its parent company's international presence.

The assimilation of SHL into MCI could slow progress over the short-term as the two companies learn to work successfully together. Nevertheless, the combination will benefit from large enterprise demand for integrated communications and computer services over the longer term.

Systemhouse considers its strengths to include:

- Wholly owned and operated international network of MCI, combined with IT expertise of Systemhouse, to serve as a single source supplier
- Strategic partnerships that provide seamless international coverage and best of breed IT solutions for all customers' needs
- Financial strength and backing of MCI to enable investment in new technologies

The company's key challenge for the coming year is to continue to attract top talent to meet the explosive growth the company is experiencing.

Parent Company

MCI Communications Corporation
1801 Pennsylvania Avenue, N.W.
Washington, D.C. 20006
Phone: (202) 872-1600

COMPANY HIGHLIGHT

*name
changed
to
Intergraph*

M & S COMPUTING, INC.
P.O. Box 5183
Huntsville, AL 35805
(205) 772-3411

James W. Meadlock, President
Private Corporation
Total Employees: 520
Total Revenues Fiscal Year End
12/31/79: \$29,745,241

THE COMPANY

- M & S Computing was incorporated in 1969 in Alabama. The company began by offering professional services to the Federal Government, specializing in systems design and development. M & S now principally provides a turnkey system with CAD/CAM applications.
- M & S management reports 1979 revenues approached \$30 million and net income reached a record high of \$2.5 million. These figures represent increases of 48% and 83% respectively over 1978. A detailed chart of M & S's financial position follows:

M & S
FIVE-YEAR FINANCIAL SUMMARY
(\$ Thousand)

ITEM \ FISCAL YEAR	1979	1978	1977	1976	1975
Revenues	\$29,745	\$20,146	\$ 9,173	\$ 5,718	\$ 3,233
• Percent increase from previous year	48%	120%	60%	77%	64%
Income before taxes	\$ 4,418	\$ 2,614	\$ 758	\$ 424	\$ 106
• Percent increase from previous year	69%	245%	79%	300%	130%
Net income	\$ 2,476	\$ 1,356	\$ 441	\$ 230	\$ 73
• Percent increase from previous year	83%	207%	92%	215%	128%

- M & S management claims that the CAD/CAM industry as a whole is expected to grow 50% per year. In accordance with that estimate, M & S revenues are expected to reach \$45 million in 1980.

COMPANY HIGHLIGHT/M & S COMPUTING, INC.

- Current revenue growth stems not only from the sale of new turnkey systems, but also from the enhancement of existing systems. M & S customers continue to expand the capabilities of their installed systems.
- Six percent of M & S's total staff is dedicated to marketing and sales. Management reports that little sales effort for its turnkey system seems to be warranted. Potential customers are referred to M & S by current M & S clients. Existing clients continually return for modification of their systems.
- Computervision, Auto-Trol Technology, Inc. and Applicon are considered by M & S management to be its major competitors.
- There are 520 employees at M & S Computing with the following functions:
 - Marketing/sales 30
 - Software services/customer support 305
 - Computer operations 25
 - Hardware production, design and development 100
 - General and administrative 60

520

KEY PRODUCTS AND SERVICES

- Following is a breakdown of M & S's total 1979 revenues.

TYPE	% OF REVENUES	\$ THOUSAND
Turnkey systems	85%	\$25,283
Professional services	10	2,975
Software products	5	1,487
	<hr/> 100%	<hr/> \$29,745

- M & S's turnkey system, the Interactive Graphics Design System (IGDS), combines an interactive graphics software package developed by M & S Computing with standard components selected from external manufacturers.
 - A distinguishing aspect of the M & S CAD/CAM turnkey system is its cartographic capabilities. These map generation and analysis applications are used by utility companies, oil companies and national governments (including Mexico, Honduras, Argentina and Brazil).
 - Other graphics applications supported by IGDS include integrated circuit design, electrical schematic definition and layout, piping and instrumentation diagram design, plant layout and other general engineering, drafting applications.

COMPANY HIGHLIGHT/M & S COMPUTING, INC.

- M & S management intends to focus development efforts on petrophysical and geophysical mapping functions in order to keep pace with the increasing demands of those industries.
- There are approximately 250 installations of IGDS.
- M & S offers three versions of its IGDS turnkey system. IGDS allows the user to interactively compose original designs, encode existing drawings, modify designs and store and retrieve designs. The IGDS data file accepts any combination of geometric and alphanumeric data necessary to define a design fully.
 - The difference between the three versions is primarily one of mini-computer size and commensurate capabilities. A maximum of 16 local or remote graphics workstations can be configured.
 - Data Processing Systems (DPS) 001 and 002 are based on DEC PDP 11/34s. They are intended for the user engaged in graphics operations: digitizing, editing, designing and plotting.
 - DPS 002 differs from DPS 001 in that it is equipped with the M & S-manufactured Disk Data Scanner, which is claimed to enhance multistation performance.
 - DPS 006 allows for the use of extensive application programs and data base management as well as graphics operations. It is based on the DEC PDP-11/70 and has an average cost of \$350,000.
 - In addition to M & S's proprietary IGDS software, DPS 006 is capable of handling other application software packages including piping, railway signal circuit drafting and automated wire list operation.
 - Also available is the M & S-developed Data Management and Retrieval System (DMRS). This software is closely integrated with the IGDS software to provide the needed management of both graphic and associated nongraphic data for automatic analysis and reporting.
 - The IGDS 3-D Package provides the capability to create axonometric and perspective projections of three-dimensional IGDS drawings.
 - In order to minimize errors when digitizing maps into a graphics system, it is sometimes easier to work with segments of a large map rather than the entire map. M & S developed the Elastic Body Small Angle Least Squares (EBSALS) program. It provides the capability to merge automatically two or more IGDS Design Files into one map in which all errors have been minimized.

COMPANY HIGHLIGHT/M & S COMPUTING, INC.

- In addition to turnkey system sales, M & S offers professional services to both federal government and commercial clients. M & S's particular expertise is in the design and development of special-purpose, PDP-11 based systems.
- M & S will sell its IGDS, DMRS, and applications software separately. All packages are for use on DEC PDP-11 machines. The IGDS and DMRS packages sell for approximately \$20,000 and the applications packages for \$5,000-10,000.
- M & S has not yet sold IGDS and DMRS packages separately from its turnkey system. The applications packages have been installed, for the most part, as enhancements to existing IGDS turnkey systems.

INDUSTRY MARKETS

- M & S's business is fairly evenly divided among the four categories listed below. Clients are primarily Fortune 1,000 companies.

INDUSTRY	% OF BUSINESS
Geophysical	30%
Utilities and state transportation	25
Federal government	20
Architects, engineers	25
	<hr/> 100%

GEOGRAPHIC MARKETS Approximately 75% of M & S's revenues are derived from the U.S. and 25% from export sales. M & S has clients in Canada, Europe and Latin America.

COMPUTER HARDWARE AND SOFTWARE M & S's in-house system is a Digital Equipment PDP-11/70 with an RSX 11M operating system.

COMPANY PROFILE

MCBA, INC.

425 West Broadway
Glendale, CA 91204-1269
(818) 242-9600

Stina Hans, Chairman and CEO
George Luntz, President
Private Corporation
Total Employees: 100
Total Revenue, Fiscal Year End
3/31/91: \$12,000,000

The Company

MCBA, Inc. (MCBA), established in 1974, originally developed and marketed accounting software for minicomputers. Currently, MCBA provides accounting, distribution, and manufacturing application software for minicomputers and also offers professional services.

Fiscal 1991 revenue was \$12 million, the same as fiscal 1990 revenue. A five-year revenue summary follows:

**MCBA, INC.
FIVE-YEAR REVENUE SUMMARY
(\$ millions)**

ITEM	FISCAL YEAR				
	3/91	3/90	3/89	3/88	3/87
Revenue	\$12.0	\$12.0	\$11.5	\$10.0	\$9.0
• Percent increase from previous year	--	4%	15%	11%	11%

As of March 31, 1991, MCBA had 100 employees, segmented as follows:

Marketing and sales	15
Customer support	25
Professional services	24
Development/operations	25
General and administrative	11
	100

Key Products and Services

Approximately 77% of MCBA's fiscal 1991 revenue was derived from application software and 23% from professional services.

MCBA's CLASSIC Software product line consists of 19 integrated packages, as shown in the exhibit.

- MCBA software operates on various UNIX, XENIX, VAX/VMS, PC-DOS, and MS-DOS-based systems, including Hewlett-Packard 3000 and 9000, DEC PDP and VAX series, Wang VS series, Sun Microsystems' SPARC systems, and IBM RS/6000 systems.
- Each package ranges in price from \$900 to \$1,700 for the microcomputer versions, and from \$2,000 to \$9,000 for the minicomputer versions.
- Report Writer is available in the minicomputer versions only and is priced from \$750 to \$1,000. In February 1991, MCBA announced that it will market Programmed Intelligence, Inc.'s fourth-generation report writer, Intelligent Query, for VAX/VMS, RM/COBOL-85, UNIX/XENIX, and DOS-based LAN environments.
- MCBA has 30,000 installations of its application software products.
- Approximately 53% of MCBA's application software sales are for minicomputer platforms; the remaining 47% of sales are for software designed for microcomputers.

The MCBA Relational Manager, introduced in February 1991, integrates MCBA's UNIX-based CLASSIC Software with Informix' relational data base management system, providing the fourth generation language benefits of Informix' SQL-based query, reporting, and development tools to MCBA software users.

MCBA's professional services include custom programming and industry consulting primarily to the discrete manufacturing and wholesale distribution industries.

- MCBA also provides optional education and training services for its software packages at its headquarters.

Industry Markets

The primary industries served by MCBA are wholesale distribution and discrete manufacturing, but MCBA's accounting software is marketed across industry segments.

MCBA targets its products at midrange companies with annual revenue in the \$5 to \$100 million range.

EXHIBIT

MCBA SOFTWARE PRODUCTS

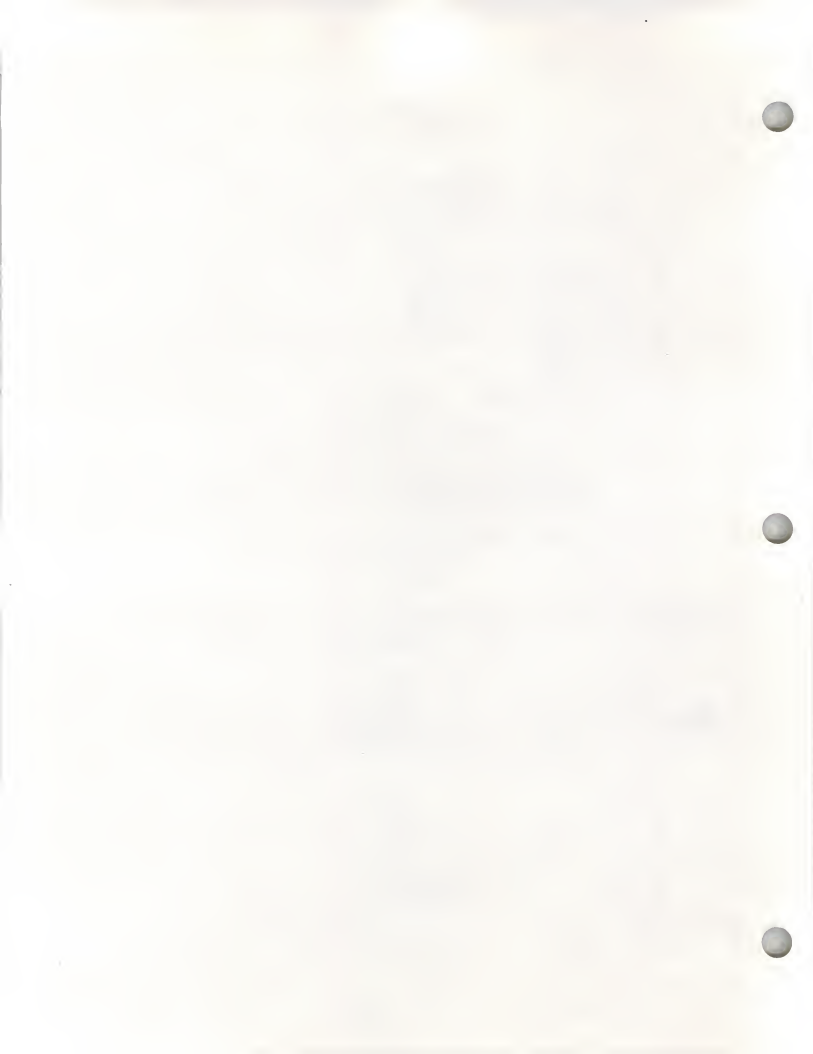
PRODUCT	NUMBER INSTALLED
MCBA CLASSIC Software	
• Accounts Payable	10,000
• Accounts Receivable	10,000
• Bill of Materials Processor	500
• Customer Order Processing	1,500
• Fixed Assets and Depreciation	1,000
• General Ledger	10,000
• Inventory Management	1,500
• Job Costing	600
• Labor Performance	100
• Mailing List	900
• Master Scheduling	100
• Material Requirements Planning	250
• Payroll	9,000
• Purchase Order and Receiving	900
• Report Writer	150
• Sales History	900
• Shop Floor Control	400
• Standard Product Costing	250
• Standard Product Routing	250
MCBA Relational Manager	New

**Geographic
Markets**

Approximately 87% of fiscal 1991 revenue was derived from the U.S., 6% from Asia, 3% from Africa and the Middle East, 2% from Canada, and 2% from South America.

**Computer
Hardware**

MCBA has more than 30 computers installed, including IBM RS/6000, IBM PC/XT, Data General Avilion, NCR Tower, Altos 5000, HP 3000, HP 9000, DEC VAX series, Wang VS, Sun SPARCstation, and Compaq systems.



COMPANY PROFILE

MCBA, INC.
425 West Broadway
Glendale, CA 91204-1269
(818) 242-9600

Stina Hans, Chairman and CEO
Private Corporation
Total Employees: 145
Total Revenue, Fiscal Year End
3/31/90: \$12,000,000

The Company

MCBA, Inc. (MCBA), established in 1974, originally developed and marketed accounting software for minicomputers. Currently, MCBA provides accounting, distribution, and manufacturing application software for minicomputers and also offers professional services.

Fiscal 1990 reached \$12 million, a 4% increase over fiscal 1989 revenue of \$11.5 million. A five-year revenue summary follows:

MCBA, INC.
FIVE-YEAR REVENUE SUMMARY
(\$ millions)

ITEM	FISCAL YEAR				
	3/90	3/89	3/88	3/87	3/86
Revenue	\$12.0	\$11.5	\$10.0	\$9.0	\$8.1
• Percent increase from previous year	4%	15%	11%	11%	5%

As of March 31, 1990, MCBA had 145 employees, segmented as follows:

Marketing and sales	30
Customer support	25
Professional services	24
Development/operations	35
General and administrative	<u>31</u>
	145

Key Products and Services

Approximately 77% of MCBA's fiscal 1990 revenue was derived from application software and 23% from professional services.

MCBA offers 19 software packages, as shown in the exhibit.

- MCBA software operates on Hewlett Packard 3000, DEC PDP and VAX series, Wang VS series, and Texas Instruments 990 or Business Systems microcomputers running PC-DOS, MS-DOS, UNIX, or XENIX operating systems.
- Each package ranges in price from \$900 to \$1,700 for the microcomputer versions, and from \$2,000 to \$9,000 for the minicomputer versions.
- Report Writer is available in the minicomputer versions only and is priced from \$750 to \$1,000.
- MCBA claims to have over 30,000 installations of its application software products.
- Approximately 53% of MCBA's application software sales are for minicomputer platforms; the remaining 47% of sales are for software designed for microcomputers.

MCBA's professional services include custom programming and industry consulting primarily to the discrete manufacturing and wholesale distribution industries.

- MCBA also provides optional education and training services for its software packages at its headquarters location.

Industry Markets

The primary industries served by MCBA are wholesale distribution and discrete manufacturing, but MCBA's accounting software is marketed across industry segments.

MCBA targets its products at mid-range companies with revenue in the \$5 to \$100 million range annually.

Geographic Markets

Approximately 87% of fiscal 1990 revenue was derived from the U.S., 6% from Asia, 3% from Africa and the Middle East, 2% from Canada, and 2% from South America.

Computer Hardware

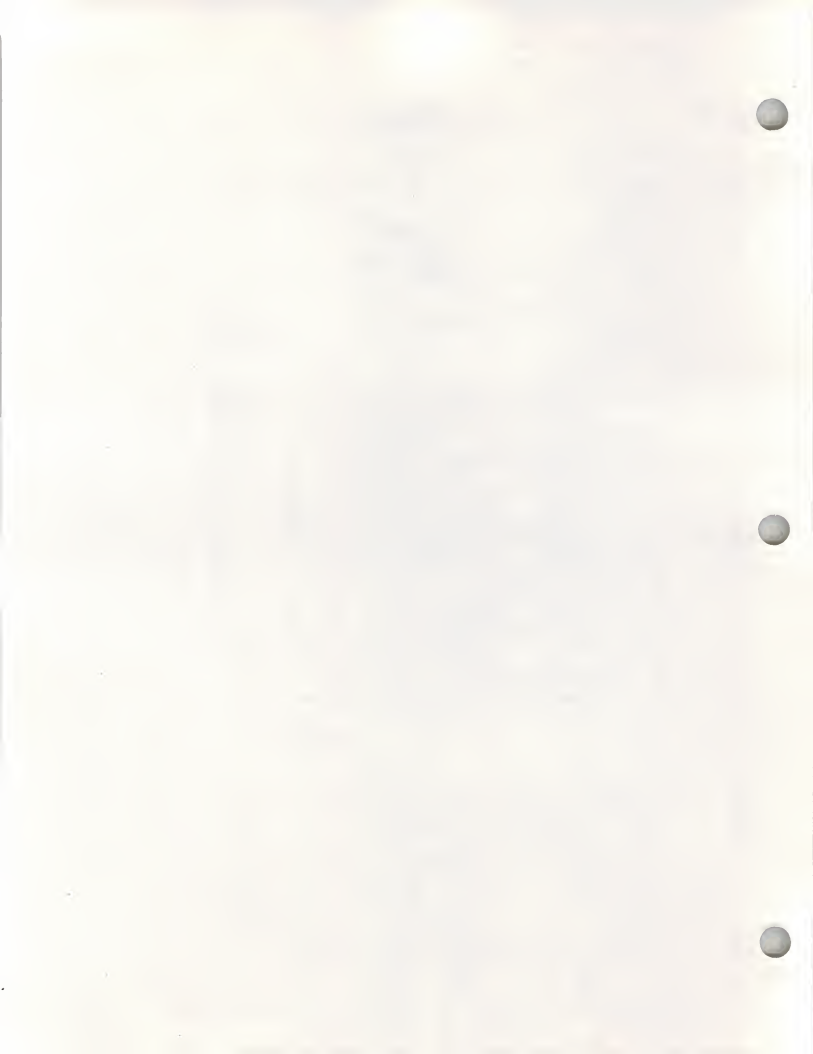
MCBA has more than 30 computers installed including DEC PDP and VAX series, Wang VS, HP 3000, TI Business System, IBM PC/XT and PC/AT, NCR, Altos, Intel, and Motorola computers.

EXHIBIT
MCBA, INC.
SOFTWARE PRODUCTS

PRODUCT NAME	NUMBER INSTALLED
• Accounts Payable	10,000
• Accounts Receivable	10,000
• Bill of Materials Processor	500
• Customer Order Processing	1,500
• Fixed Assets and Depreciation	1,000
• General Ledger	10,000
• Inventory Management	1,500
• Job Costing	600
• Labor Performance	100
• Mailing List (a)	900
• Master Scheduling (b)	100
• Material Requirements Planning	250
• Payroll	9,000
• Purchase Order and Receiving	900
• Report Writer	150
• Sales History (a)	900
• Shop Floor Control	400
• Standard Product Costing	250
• Standard Product Routing	250

(a) Available for Wang VS Series only.

(b) Available for Wang VS Series and IBM PC/AT only.



COMPANY PROFILE

MCBA, INC.

425 West Broadway
Glendale, CA 91204-1269
(818) 242-9600

Stina Hans, Chairman and CEO
Private Corporation
Total Employees: 146
Total Revenue, Fiscal Year End
3/31/89: \$11,500,000

The Company

MCBA, Inc. (MCBA), established in 1974, originally developed and marketed accounting software for minicomputers. Currently, MCBA provides accounting, distribution, and manufacturing application software for minicomputers and also offers professional services.

Revenue increased 15% from \$10 million in fiscal 1988 to \$11.5 million in fiscal 1989. A five-year revenue summary follows:

MCBA, INC. FIVE-YEAR REVENUE SUMMARY (\$ millions)

ITEM	FISCAL YEAR				
	3/89	3/88	3/87	3/86	3/85
Revenue	\$11.5	\$10.0	\$9.0	\$8.1	\$7.7
• Percent Increase from previous year	15%	11%	11%	5%	5%

As of March 31, 1989, MCBA had 146 employees, segmented as follows:

Marketing and sales	52
Customer support (software)	23
Professional services	20
Development/operations	21
General and administrative	<u>30</u>
	146

Key Products and Services

MCBA offers 19 software packages, as shown in the exhibit. Application software accounted for approximately 85% of MCBA's fiscal 1989 revenue.

EXHIBIT
MCBA, INC.
SOFTWARE PRODUCTS

PRODUCT NAME	NUMBER INSTALLED
• Accounts Payable	10,000
• Accounts Receivable	10,000
• Bill of Materials Processor	500
• Customer Order Processing	1,500
• Fixed Assets and Depreciation	1,000
• General Ledger	10,000
• Inventory Management	1,500
• Job Costing	600
• Labor Performance	100
• Mailing List (a)	900
• Master Scheduling (b)	100
• Material Requirements Planning	250
• Payroll	9,000
• Purchase Order and Receiving	900
• Report Writer	150
• Sales History (a)	900
• Shop Floor Control	400
• Standard Product Costing	250
• Standard Product Routing	250

(a) Available for Wang VS Series only.

(b) Available for Wang VS Series and IBM PC/AT only.

- MCBA software operates on Hewlett Packard 3000, DEC PDP and VAX series, Wang VS series, and Texas Instruments 990 or Business Systems microcomputers running PC-DOS, MS-DOS, UNIX, or XENIX operating systems.
- Each package ranges in price from \$900 to \$1,700 for the microcomputer versions, and from \$2,000 to \$9,000 for the minicomputer versions.
- Report Writer is available in the minicomputer versions only and is priced from \$750 to \$1,000.
- MCBA claims to have over 30,000 installations of its application software products.
- Approximately 90% of MCBA's application software sales are for minicomputer platforms the remaining 10% are designed for microcomputers.

Approximately 15% of MCBA's 1989 revenue was derived from its professional services division.

- MCBA's professional services include custom programming and industry consulting primarily to the discrete manufacturing and wholesale distribution industries.
- MCBA also provides optional education and training services for its software packages at its headquarters location.

Industry Markets

The primary industries served by MCBA are wholesale distribution and discrete manufacturing, but MCBA's accounting software is marketed across industry segments.

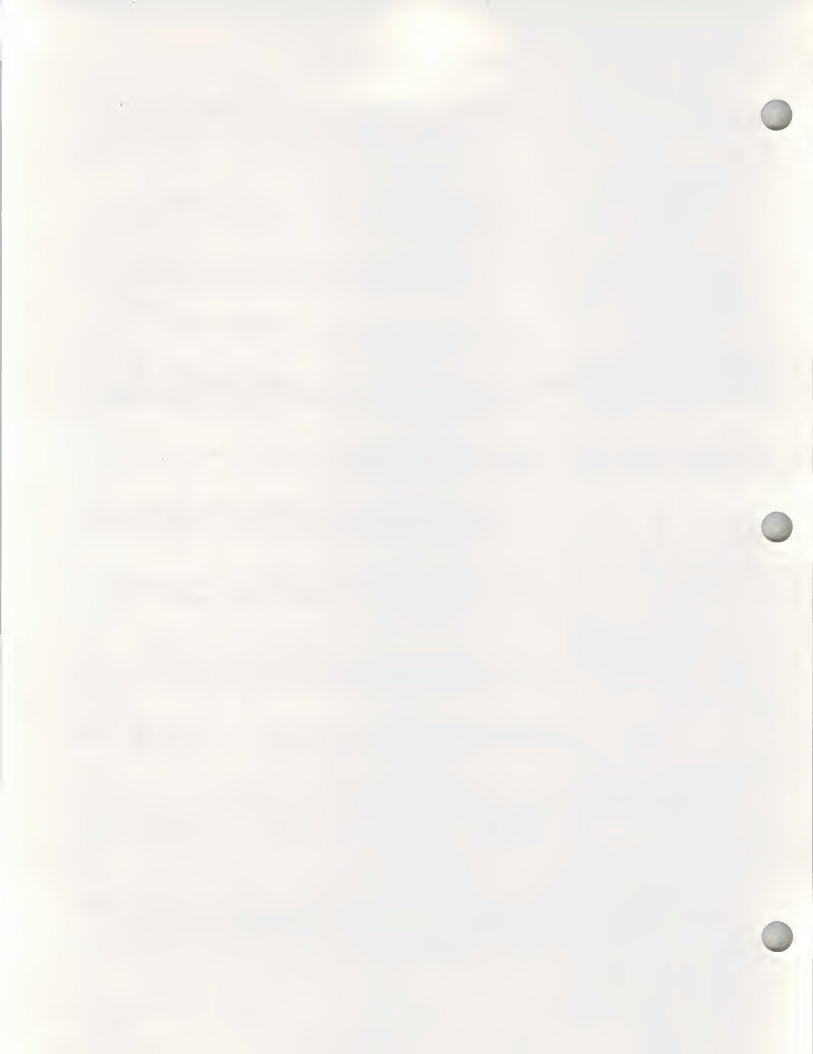
MCBA targets its products at mid-range companies with revenue in the \$5 to \$100 million range annually.

Geographic Markets

Approximately 88% of fiscal 1989 revenue was derived from the U.S., 5% from Europe, 5% from Asia, and the remaining 2% from Canada.

Computer Hardware

MCBA has more than 30 computers installed including DEC PDP and VAX series, Wang VS, HP 3000, TI Business System, IBM PC/XT and PC/AT, NCR, Altos, Intel, and Motorola computers.



COMPANY PROFILE

MCBA, INC.
425 West Broadway
Glendale, CA 91204
(818) 242-9600

Stina Hans, President
Private Corporation
Total Employees: 120
Total Revenue, Fiscal Year End
3/31/85: \$7,700,000

THE COMPANY

- MCBA, Inc., established in 1974, originally developed and marketed accounting software for minicomputers. Currently, MCBA provides accounting, distribution, and manufacturing application software for microcomputers and minicomputers.
- Revenue increased 5% from \$7.3 million in fiscal 1984 to \$7.7 million in fiscal 1985. A five-year revenue summary follows:

MCBA, INC.
FIVE-YEAR REVENUE SUMMARY
(\$ millions)

ITEM \ FISCAL YEAR	FISCAL YEAR				
	3/85	3/84	3/83	3/82	3/81
Revenue	\$7.7	\$7.3	\$5.0	\$4.0	\$2.9
Percent increase from previous year	5%	46%	25%	38%	16%

- As of February 1986, MCBA had 120 employees, segmented as follows:

Marketing/sales	37
Customer support/software services	23
Development/operations	21
Distribution	9
General and administrative	30
	120

KEY PRODUCTS AND SERVICES

- Approximately 95% of fiscal 1985 revenue was derived from application software sales. The remaining 5% was derived from education and training services associated with MCBA software products.

- MCBA offers 19 software packages, as shown in the exhibit. Accounting software accounted for approximately 45% of fiscal 1985 revenue and payroll software provided 10%.
 - MCBA software operates on microcomputers running PC-DOS, MS-DOS, UNIX, XENIX, or RIM/COS (Ryan McFarland) operating systems or on the following minicomputers: Hewlett-Packard 3000, DEC PDP and VAX series, Wang VS series, or Texas Instrument 990 or Business Systems.
 - Each package ranges in price from \$900 to \$1,700 for the micro-computer versions and from \$2,000 to \$9,000 for the minicomputer versions.
 - Report Writer is available in the minicomputer versions only and is priced from \$750 to \$1,000.
- MCBA provides optional education and training services for its software packages at its headquarters location. Half day classes are taught by instructors and are priced at approximately \$250. Additional training is also available.

INDUSTRY MARKETS

- MCBA markets its software through approximately 1,500 resellers, distributors, and dealers.
- MCBA derived approximately 20% of fiscal 1985 revenue from the discrete manufacturing industry, 20% from the retail and wholesale distribution industry, and 5% from the government. The remaining 55% was derived from accounting and payroll software licensed across all industry sectors.

GEOGRAPHIC MARKETS

- Approximately 88% of fiscal 1985 revenue was derived from the U.S., 5% from Canada, 2% from Europe, and the remaining 5% from other countries.

COMPUTER HARDWARE

- MCBA has more than 30 computers installed including DEC PDP and VAX, Wang VS, HP 3000, TI Business System, IBM PC/XT and PC/AT, Perkin-Elmer, NCR, Zilog, Altos, Intel, and Motorola computers.

EXHIBIT

MCBA, INC.
SOFTWARE PRODUCTS

PRODUCT NAME	NUMBER INSTALLED
Accounts Payable	8,000
Accounts Receivable	8,000
Bill of Materials Processor	50
Customer Order Processing	500
Fixed Assets and Depreciation	500
General Ledger	8,000
Inventory Management	500
Job Costing	200
Labor Performance	50
Mailing List*	200
Master Scheduling†	50
Material Requirements Planning	50
Payroll	8,000
Purchase Order and Receiving	200
Report Writer	100
Sales History*	500
Shop Floor Control	200
Standard Product Costing	200
Standard Product Routing	200

*Available for Wang VS Series only.

†Available for Wang VS Series and IBM PC/AT only.



MPACT EDI SYSTEMS

17197 N. Laurel Park Drive
Livonia, Michigan 48152
Phone: (313) 462-2244
Fax: (313) 462-9294

President:	J. Peter Selda
Status:	Subsidiary
Parent:	Tandem Computer Inc.
Tandem Revenue:	\$1,922,179,000
MPACT Revenue:	\$3,000,000*
Employees:	65
FYE:	

*INPUT estimate

Key Points

- MPACT EDI Systems (MPACT) provides solutions to electronic commerce requirements of enterprises in a worldwide market, offering software applications and system integration services.
- MPACT also offers an electronic data interchange (EDI) software application which enables an enterprise to implement a central clearinghouse approach to the management of EDI or other types of electronic commerce.
- MPACT products give clients the ability to create closer communication ties with enterprise trading partners providing MPACT clients with a strategic advantage.
- Market acceptance for the MPACT product line was high in 1992.
- MessageWay[®] systems offer a modular design providing a unique functionality for value added networks (VAN) or the VAN-replacement marketplace.
- MPACT targets hub companies and emerging hubs with communication needs that include EDI as well as bulk file transfer, e-mail messages, and binary files.
- MPACT will focus on an expanded marketing effort in 1993.

Company Description

MPACT, a Tandem company, was formerly a privately owned systems integration company that, in 1988, co-developed an event-driven EDI message communications system for Chrysler Corporation. This system was based on Tandem NonStop™ On-Line Transaction Processing systems. The original EDI products business unit became MPACT EDI Systems in 1989, when the 300 person systems integration services company was divested to Cap Gemini America.

Tandem acquired MPACT in late 1991 as part of its strategy to develop software businesses that provide a complete solution for the customer.

MPACT offers electronic commerce management software that provides automatic and continuous delivery of EDI and other message types between business trading partners. The MessageWay product line provides the user with the ability to control message document flow in reference to defining message delivery schedules, translation processing methodology and communication line routing using multiple protocols.

Strategy

MPACT targets large companies with communication needs that go beyond EDI. File transfer, E-mail, and real-time interconnection of application software are possible through the MPACT product.

Two categories of targeted clients are:

- Companies with many divisions that need a consolidated, comprehensive communication switching platform.
- Companies offering EDI value-added network services.

Financials

In 1992, INPUT estimates that MPACT revenue was approximately \$3 million.

Alliances

MPACT has an implementor/distributor program. Distributors provide applications integration and custom development services as well as enduser software support.

To date, MPACT has established ten distribution agreements with companies in Europe, Asia and the United States.

Key Products and Services

MPACT EDI software runs on all Tandem Guardian™ platforms.

INPUT estimates that 30 MPACT systems have been sold to date.

All products have been priced according to simultaneous throughput required (i.e., the number of telecommunications sessions that can be concurrently supported -- usually in initial increments of 3, 6, or 12).

MessageWay Product Line

The MessageWay product line include message control, (mail box handling, switching, etc.), an EDI translation module (called XWay[®]), and a wide assortment of communications modules and value-added network (VAN) interfaces. MPACT pricing is for software and currently does not include hardware.

MessageWay EDI System 3[™] (three concurrent lines supported) starting price is \$45,000. Standard communications are asynchronous and bisynchronous. Optional modules for SNA or X.25 communications are \$14,500. Pre-built VAN connections are \$3,500.

MessageWay EDI System 6[™], (supporting 6 concurrent telecommunication sessions) is priced at \$90,000. MessageWay EDI System 12 (12 lines) is priced at \$180,000.

MessageWay software can also be purchased without the translation module. This product is known as the MessageWay Electronic Mailroom[™]. The product offers a non-stop clearinghouse system that can function as a front-end without the translation module.

Industry Markets

MPACT markets its products primarily to Fortune 500 companies and value-added network service providers.

Three key industry markets for MPACT are discrete manufacturing, retail, and transportation.

Geographic Markets

The principal targeted markets for MPACT products currently are the United States, Europe and Asia.



COMPANY PROFILE

MPSI SYSTEMS, INC.
8282 South Memorial Drive
Tulsa, OK 74133
(918) 250-9611

Ronald G. Harper, Chairman and
President
Public Corporation
Total Employees: 338
Total Revenue, Fiscal Year End
9/30/85: \$21,678,000
Computer Services Revenue:
\$5,000,000*

THE COMPANY

- MPSI Systems, Inc. was founded in 1970 to develop and market application software for site selection and evaluation of retail outlets for major petroleum companies. Currently, MPSI offers application software packages and processing services primarily to the petroleum industry. MPSI also provides market area studies for its clients.
- Revenue for fiscal 1985 reached \$21.7 million, a 4% increase over fiscal 1984 revenue of \$20.8 million. Net income decreased 6% from \$1.8 million in fiscal 1984 to \$1.7 million in fiscal 1985. A five-year financial summary follows:

MPSI SYSTEMS, INC. FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	9/85	9/84	9/83	9/82	9/81
Revenue	\$ 21,678	\$ 20,775	\$ 14,341	\$ 8,953	\$ 6,633
• Percent increase from previous year	4%	45%	60%	35%	135%
Income before taxes	\$ 3,136	\$ 3,163	\$ 3,709	\$ 1,353	\$ 1,285
• Percent increase (decrease) from previous year	(1%)	(15%)	174%	5%	-
Net income	\$ 1,699	\$ 1,808	\$ 2,030	\$ 743	\$ 1,040
• Percent increase (decrease) from previous year	(6%)	(11%)	173%	(29%)	-
Earnings per share	\$ 0.20	\$ 0.21	\$ 0.27	\$ 0.11	\$ 0.15
• Percent increase (decrease) from previous year	(5%)	(22%)	145%	(27%)	-

*INPUT estimate

1 of 6
June 1986

MPSI SYSTEMS, INC.

- MPSI spent \$2,606,000, \$1,703,000, and \$999,000 on research and development in fiscal 1985, 1984, and 1983, respectively.
- Revenue for the six months ending March 31, 1986 reached 9.8 million, a 2% increase over \$9.6 million for the same period in fiscal 1985. Net income was \$746,000 compared to a net loss of \$3,000 for the same period in 1985.
- As of September 30, 1985, MPSI had 338 employees, segmented as follows:

Marketing/sales	43
Research and development	29
Data base analysis, consulting, and production	230
General and administrative	<u>36</u>
	338

- MPSI had 251 employees in the U.S. and the remaining 87 were employed in foreign countries.
- Currently, MPSI has approximately 400 employees.

KEY PRODUCTS AND SERVICES

- INPUT estimates that MPSI derived approximately 21% of fiscal 1985 revenue from software products and 2% from interactive, remote batch, and batch processing services. The remaining 77% was derived from market area studies associated with MPSI's software.
- MPSI derives more than 80% of its revenue from Retail Planning Services which include MPSI's market area data bases and MPSI's primary software product, Retail Planning SystemTM. (RPS).
 - MPSI software and market data bases operate on IBM 43XX, 303X, and 308X computers running MVS, VM, or DOS operating systems and on DEC VAX 11/700 series computers running the VAX/VMS operating system.
 - MPSI has recently installed a market data base onto an IBM PC/RT. If MPSI software and data bases are able to operate on the smaller and less expensive PC/RT, smaller companies will also be able to use MPSI's products and services.
 - MPSI software products require market area data bases provided on magnetic tape by MPSI to process the "supply" or retail outlet data of the customer. Market area data bases include "demand" or demographic data gathered by MPSI from aerial photography, census and traffic studies and tracts, actual house or outlet counts to establish growth, and a variety of other sources. MPSI offers four types of studies, as follows:

- Market Area Studies are used by customers with a large number of retail sites to analyze market conditions and evaluate site locations in metropolitan areas. While each market area study is accomplished for and sold to a single customer, MPSI can generally use the demographic data interchangeably as a major part of other studies in the same market for customers in the same or comparable retail segments. Prices of market area studies range from \$14,000 for a smaller city to \$940,000 for a city the size of Los Angeles (CA). An average study for a city in the U.S. would cost approximately \$72,000.
- Single Site Studies are used to evaluate market conditions or the effects of various operating decisions at a specific location. The price of a single site study ranges from \$1,300 to \$6,000.
- Scheduled Market Area Studies differ from market area studies in that a study is initiated and scheduled by MPSI and offered to clients on a subscription basis, with the intent of updating the study on a regular basis. The supply data used in this type of study are collected by MPSI. While each of the studies uses the same demographic data base, the final data base provided to each client is unique. Fifty-five such studies were completed in fiscal 1985 and 15 were in progress at September 30, 1985. The price of each scheduled market area study ranges from \$16,000 to \$928,000 per subscriber.
- Dynamic Market Area Studies are similar to Scheduled Market Area Studies in that they are offered to clients on a subscription basis, but are automatically updated 12 months after the original delivery date. The client must submit data for each of his retail outlets but is not required to gather data on any competitive outlet. Pricing is similar to that for scheduled market studies.
- The Retail Planning System uses the market area data bases to construct a mathematical model of a retail market. RPS allows users to forecast the effect changes in the supply or demand variables will have on sales volume. RPS enables clients to select new sites, identify outlets to divest or rebuild, evaluate price and other competitive strategies, and assess multiple profit centers.
- The Retail Planning System ranges in price from \$100,000 to \$600,000 for a five-year license per country depending on the size of the country. The five-year software user license fee includes installation and training.
- As of September 1985, MPSI had 47 long-term software user agreements. A five-year history of user agreements follows:

	<u>9/85</u>	<u>9/84</u>	<u>9/83</u>	<u>9/82</u>	<u>9/81</u>
In effect at beginning	37	24	17	10	5
New agreements	10	14	7	7	5
Agreements terminated	-	(1)	-	-	-
In effect at end	47	37	24	17	10

- Five new software products were released in fiscal 1985. Each of the following packages use market area data bases.
 - The Retail Location System^{T.M.} (RLS) identifies and ranks retail locations. This system does not provide sales volume projections. RLS is primarily targeted to the banking industry and to the retailing industry.
 - RLS is currently available. Pricing for a one-year license has not been finalized.
 - The Market Retail Data Access System^{T.M.} (Mr. DA) is a micro-computer-based relational data base system that allows interactive access to information stored in MPSI data bases. Mr. DA allows clients to access and arrange information into report formats as needed.
 - Mr. DA costs \$8,000 for a perpetual license plus approximately 20% of the initial license fee annually for maintenance. There is also a loading fee to load the market data bases necessary to run the system onto the customer's computers. The loading fee is approximately 3% of the price of the market data base loaded.
 - There are currently three installations of Mr. DA.
 - The Income Optimization Model^{T.M.} (IOM) helps gasoline retailers calculate the return on investment through individual outlets and their networks by predicting the income derived from petroleum sales, convenience tool sales, car wash revenue, tires and parts revenue, and service (labor) revenue.
 - IOM is in testing and is currently available. Pricing for the system has not been finalized.
 - Retail Gasoline Survey^{T.M.} (RGS) software is developed for hand-held computers for retail outlet surveys. The user can enter information concerning facility image, prices, type of service, and other observable information on a computerized data form. The computer cross-checks the information against previous surveys and applies error checking procedures to ensure that the data is consistent. The data in the hand-held computer can be uploaded directly into a micro or mainframe computer.

- RGS is currently in the development stage.
- Geographic Information SystemTM (GIS) allows users to request custom designed data bases from MPSI that are based on geographic coordinates. GIS allows users to query and extract layers of information stored in various data bases (including customer information files, census tracts, postal codes, MPSI demographics, and MPSI retail facility surveys).
- GIS costs \$92,000 for a perpetual license. Maintenance and market data base loading fees have not been finalized.
- GIS is currently in testing.
- MPSI software clients can run MPSI software on its own computers or use MPSI's computers. In addition to the software license and market study fees, clients using MPSI's computers must pay for connect time and a fee per tactic or "what if" question.
- Clients who have entered into long-term software user agreements are entitled to discounts on data bases and on tactics run on MPSI's computers. The average cost of a market study and tactic for a long-term user is approximately \$51,000 and \$50, respectively.
- MPSI also provides market area studies to clients who are not software users on a per-study basis. These clients provide supply or outlet data which MPSI runs with its market area data bases.
- Average costs to these clients for a market study and per tactic are \$71,000 and \$125, respectively. The clients have access to the market study for one year.
- These clients are usually testing MPSI's software before purchase.

INDUSTRY MARKETS

- Virtually all of MPSI's fiscal 1985 revenue was derived from the petroleum industry. Two companies, Texaco, Inc. and Exxon, Inc., and their affiliates accounted for approximately 30% of fiscal 1985 revenue.
- MPSI's strategy is to adapt its software for use by various retail industries including convenience food outlets, restaurants, financial institutions, and supermarkets. MPSI has adapted or is currently adapting its software and data bases for these industries.

GEOGRAPHIC MARKETS

- Approximately 45% of fiscal 1985 revenue was derived from the U.S. The remaining 55% was derived from international sources. A three-year source of revenue summary follows:

MPSI SYSTEMS, INC.
THREE-YEAR SOURCE OF REVENUE SUMMARY
(\$ thousands)

FISCAL YEAR ITEM	9/85		9/84		9/83	
	Revenue	Percent of Total	Revenue	Percent of Total	Revenue	Percent of Total
United States	\$ 9,792	45%	\$ 10,183	49%	\$ 8,101	57%
Canada and South America	3,391	16	2,168	11	2,013	14
Australia, New Zealand, and Japan	4,759	22	3,146	15	1,230	9
Europe and United Kingdom	3,531	16	5,026	24	2,791	19
Africa	<u>205</u>	<u>1</u>	<u>252</u>	<u>1</u>	<u>206</u>	<u>1</u>
Total	\$ 21,678	100%	\$ 20,775	100%	\$ 14,341	100%

- MPSI maintains its headquarters and principal facility in Tulsa (OK).
- MPSI also maintains international regional offices in Melbourne, Australia; Rio de Janeiro, Brazil; Toronto, Canada; Paris, France; Hamburg, West Germany, and Tokyo, Japan.
 - A sales office is located in London and a European production facility is located in Bristol, England.

COMPUTER HARDWARE

- MPSI maintains computer equipment as follows:
 - Tulsa:
 - 1 IBM 4381, MVS/TSO.
 - 1 Intergraph CAD/CAM system (based on a DEC VAX-11/780) with six workstations, VMS.
 - Bristol:
 - 1 DEC VAX-11/780, VAX, VMS.
 - 1 Intergraph CAD/CAM system (based on a DEC VAX-11/780) with two workstations, VMS.

4/13-7/14/78 no plans going. kind of go public

Acquired by
Intel
on 100,000
shares

COMPANY HIGHLIGHT

R "Bob" J. Hing
VP-Finance

MRI SYSTEMS CORPORATION
12675 Research Blvd.
Austin, TX 78759
(512) 258-5171

R. L. Brueck, President
Private corporation
Total employees: 188
Total revenues, fiscal year end
2/28/78: \$6,907,000 (unaudited)

acquisition of Intel Corp.
ann. 9/21/78

THE COMPANY

report figures all FY 77.

- MRI Systems Corporation (MRI), incorporated in Texas in 1965, offers packaged software products. SYSTEM 2000, a data base management system and the company's principal product, is used by more than 700 organizations worldwide.
- The company now offers professional services in addition to software.
- MRI revenues increased an average 22% per year between fiscal 1976 and fiscal 1978. Fiscal 1978 revenues of \$6.9 million showed a 13% increase over fiscal 1977 revenues of \$6.1 million. Fiscal 1977 revenues had increased 33% over fiscal 1976 revenues of \$4.6 million.
- Earnings have not advanced as strongly as revenues. Although MRI had a net income of approximately 8% of revenues in fiscal 1976, it lost approximately .2% on total revenues in fiscal 1977 as a result of expenditures for new product development. Management expects fiscal 1978 to show a net profit of 4% of total revenues after even higher new product expenditures. Management states that, in both years, the rate of new product development has increased with the available operating cash flow.
- MRI employees are distributed as follows:

\$76 = 4.6m
rev.

- Computer services	121	65%
- Marketing	27	14
- Administration	26	14
- New product development	14	7
	188	100%

KEY PRODUCTS AND SERVICES

- Approximately 70% of total company revenues are generated by the sale of its products. The other 30% derives from professional services: systems design and consulting.

78 = 6m - Sys 2000
.9m - Prof Svcs.

February 1978

COMPANY HIGHLIGHT/MRI SYSTEMS CORPORATION

- SYSTEM 2000, the major software product, is a generalized data base management system introduced by MRI in 1970. It generates approximately 69% of total company revenues and has 250 installations - including 21 service bureaus - in the U.S., Canada, and Europe. Its cumulative sales exceeded \$10 million in ^{fiscal} 1977. *\$20m. for cal 77.*
 - SYSTEM 2000 features include:
 - Data definition
 - Data capture/collection
 - Data storage
 - Data maintenance
 - Data dissemination
 - It is available for IBM 360/370 Series running under MFT, MVT, CMS, DOS/VS, VSI, and MVS; CDC 6600; CYBER 70 and CYBER 170 series running under SCOPE, KRONOS, and NOS operating systems; and Univac 1100 Series mainframes running under EXEC 8 and Computer Sciences Corporation CSTS operation systems. MRI also supports and provides interfaces between CICS, Intercomm, and Task Master.
- TP 2000, a teleprocessing monitor introduced in 1974, has approximately 15 users and generates about 1% of total revenues. Sold only in conjunction with SYSTEM 2000, TP 2000 is a transaction driven, multi-tasked teleprocessing system for IBM 360/370 systems running under OS, OS/VS, and VM/370.
 - Its features include:
 - Terminal support
 - Key word data entry
 - Back-up and warm start
 - Performance monitoring
 - Message switching and broadcast facilities
 - Output paging
 - Interface with SYSTEM 2000
 - TP 2000 is currently in use for the following applications:
 - Personnel
 - Inventory
 - Purchasing
 - Engineering
 - Petro-chemical research
 - Bill of material
 - Import-export
 - Production control
- CONTROL 2000, a data dictionary/directory and system support directory introduced in late 1977. Currently, the system has three users; therefore, it is not generating a significant portion of MRI revenues.

COMPANY HIGHLIGHT/MRI SYSTEMS CORPORATION

- CONTROL 2000 features provide:
 - . Transactions for capturing the data
 - . Data base for storing the data
 - . Reports for presenting the information
- As a system support directory, CONTROL 2000 supports relationships between additional entities such as programs, files, records, data bases, and schemas.
- The company's professional services group consists of over 50 people and generates approximately 30% of total revenues. Called System Design Group Consulting, its contract programming activities support SYSTEM 2000 and TP 2000.

INDUSTRY MARKETS MRI revenues are primarily derived from the Federal Government and the services industry, as shown below:

<u>INDUSTRY</u>	<u>1977</u>	<u>1978</u>
Government-Total	49%	41%
(Federal)	(43)	(38)
(State & Local)	(6)	(3)
Services	32	35
Manufacturing-process	7	11
Utilities	6	2
Education	3	6
Medical and hospital	3	0
Insurance	0	5

GEOGRAPHIC MARKETS

- Approximately 20% of MRI sales are in Canada, Europe, and Japan. The U.S. users are located in 35 states, with concentrations in the Eastern, North Central, and Pacific states.
- Sales offices are located in Austin, TX; Boston, MA; Charlotte, NC; Chicago, IL; Huntsville, AL; Los Angeles, CA; New York, NY; Portland, OR; Research Triangle Park, NC; St. Louis, MO; San Francisco, CA; Wheaton, MD; and Willowdale and Ottawa, Ontario, Canada.

COMPUTER HARDWARE AND SOFTWARE MRI has an IBM 370/145 running under IBM (DOS/VS, VSI) located in Austin, TX. Non-IBM versions of SYSTEM 2000 are tested by accessing remote computing companies and customer facilities.

Letter from Dns —

U? MRI merging w/ Precision Instrument Co

COMPANY HIGHLIGHT

MRI SYSTEMS CORPORATION
12575 Research Boulevard
Austin, Texas 78766
(512) 258-5171

Robert Brueck, President
Private Corporation

Total Company and Computer Services Sales
as of FY ending 2/74: ~~\$5,100,000~~

28/77: 56.78m * (estimated by INPUT)

NUMBER OF EMPLOYEES engaged in computer services: 150

KEY PRODUCTS/SERVICES: MRI sales are derived mostly from software products, and to some extent professional (software) services.
Key products include:

> 500 users worldwide (6/77)

- System 2000: a data management system which segments user requirements into the following areas: data definition, data capture/collection, data storage, data maintenance and data dissemination. It is compatible with IBM (MVT, MFT, IMS, VS1 and VS2), Control Data (SCOPE and KRONOS), and Univac (EXEC 8) systems.
- TP 2000: a teleprocessing monitor. Features of this transaction driven, multi-tasked teleprocessing system are complete terminal support, key-word data entry, back-up and warm start, output paging, performance monitoring, message switching and broadcast facilities. It can be interfaced with System 2000 and operate on IBM 360/370 equipment under OS and VS.
- System Design Group Consulting: made available on a contract programming basis for projects pertaining to System 2000 and TP 2000. Consists of 40 people.

APPLICATIONS: Data base management applications include retrieval systems, sort and merge programs and teleprocessing monitors.

INDUSTRY MARKETS: While applications are cross-industry oriented and used by several industries, sales are concentrated in manufacturing and government, and to some extent in education, insurance and medical/hospital industries.

GEOGRAPHIC MARKETS: MRI users are located in some 35 of the continental U.S. as well as in Europe, Japan, and Australia. Offices are located in:

Austin, TX
Chicago, IL
Dallas, TX
Huntsville, AL

Los Angeles, CA
New York, NY
San Francisco, CA
Washington, D.C.

Willowdale, Ontario, Canada

June/1976

COMPANY HIGHLIGHT/MRI SYSTEMS CORPORATION

COMPUTER HARDWARE AND SOFTWARE: None. System 2000 tests are conducted through remote computing services companies.

OVERALL ASSESSMENT AND TRENDS:

Founded in 1965, MRI defined its niche early in the area of software products and data base management systems. The System 2000 is a leading data management system in a highly competitive market, with cumulative sales in excess of \$10 million. There are now about 130 installations and 340 users through 16 remote computing companies licensed to offer the product.

Success of System 2000 is due mainly to its being a powerful product which is designed for the user rather than for the programmer. The firm stresses education and support services. There are seven full time staff members on the training staff who teach 10 courses pertaining to System 2000.

TP 2000, with 15 installations, is a newer product which has received a cooler reception from the market.

By the end of 1976 MRI will introduce DOS/VS capability. Annual sales are expected to increase by 40% during the current fiscal year.

June/1976

H-34.2

INPUT

COMPANY PROFILE

MTECH CORP

1925 West John Carpenter Freeway
P.O. Box 152055
Irving, TX 75015-2055
(214) 506-4000

CEO: Open
Public Corporation, OTC
Total Employees: 2,770
Total Revenue, Fiscal Year End
12/31/87: \$232,112,000

The Company

MTech provides processing services, software products, and professional services primarily to the banking and financial services industry. MTech is the developer and operator of MPACT[®], one of the largest proprietary ATM networks in the country. As of this printing, MTech was in the process of being acquired by Electronic Data Systems, General Motors' information services subsidiary.

- MTech was founded in 1968 as Affiliated Computer Systems (ACS), a private corporation that primarily provided processing services to commercial banks. In 1975 ACS was acquired by Mercantile Texas Corporation, a bank holding company, for \$2.5 million. The company subsequently expanded its products and services to credit unions and thrift financial institutions, including savings and loans and mutual savings banks.
- In October 1984, MCorp was formed as a result of a merger of Mercantile Texas Corporation and Southwest Bancshares, Inc. and ACS was renamed MTech, a wholly owned subsidiary of MCorp.
- In December 1986 MTech completed an initial public offering of 20% of its common stock. Net proceeds of \$19.1 million were used to partially repay debt owed to a MCorp affiliate.
 - Approximately 1.25 million shares were issued and sold by MTech and 1 million shares were sold by MCorp, reducing its ownership in MTech to about 80%.
- MCorp and its affiliate banks are MTech's largest customers, contributing \$65.1 million (28% of revenue) in 1987, \$56.4 million (28% of revenue) in 1986, and \$51.1 million (31% of revenue) in 1985.

- From 1975 through 1986 MTech provided processing services to MCorp under separate service agreements with each MCorp affiliate.
- Effective January 1, 1987 MTech entered into a six-year contract with MCorp to provide processing services to all MCorp affiliates for fees based on actual costs incurred plus a management fee of 17.65% of estimated costs for each year. The agreement includes an incentive fee payable to MTech in the event that actual processing costs to MCorp are less than estimated costs.
- MCorp guaranteed to MTech minimum annual total data processing revenue, including MPACT, annual management, and system enhancement fees, of \$65 million in 1987, \$67.5 million in 1988, and \$70 million per year in 1989, 1990, 1991, and 1992.

In March 1988 it was announced that Electronic Data Systems (EDS) of Dallas (TX) would acquire MTech for approximately \$350 million.

- Under the terms of the agreement MCorp agreed to sell its 80.1% stake in MTech to EDS for approximately \$30 per share in cash and securities (\$281 million). EDS will offer the option of \$30 in cash or a combination of cash and securities to MTech's other shareholders.
- EDS completed its purchase of MCorp's interest in MTech on April 19, 1988. The acquisition of the remaining shares is expected to be completed in June 1988. The operations of MTech will be merged into EDS. Processing agreements with MCorp will continue after the merger.

MTech's 1987 revenue reached \$232.1 million, a 17% increase over 1986 revenue of \$198.6 million. Net income rose 84%, from \$8.3 million in 1986 to nearly \$15.4 million in 1987. A five-year financial summary follows:

**MTECH CORP.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)**

ITEM	FISCAL YEAR				
	1987	1986	1985	1984	1983
Revenue	\$232,112	\$198,559	\$166,182	\$116,351	\$83,385
• Percent increase from previous year	17%	20%	43%	40%	52%
Income before taxes	\$26,758	\$15,789	\$6,167	\$7,245	\$6,024
• Percent increase (decrease) from previous year	69%	156%	(15%)	20%	80%
Net income	\$15,350	\$8,365	\$4,002	\$4,195	\$5,024
• Percent increase (decrease) from previous year	84%	109%	(5%)	(17%)	70%
Earnings per share	\$1.24	\$0.80	\$0.40	*	*
• Percent increase from previous year	55%	100%	N/A	*	*

* Per share amounts are not available for years prior to 1985.

(a) 1986 results include a pre-tax gain of \$1.95 million from MTech's sale of its ownership interest in the CIRRUS ATM network and expenses of \$1.4 million for the move of corporate headquarters from Dallas to Irving.

MTech management attributes the company's growth in revenue and net income to the following:

- Continued strong sales of processing services and MTech's ACTION2000^R line of funds transaction processing software products.
- The 13 businesses acquired by MTech between January 1983 and December 31, 1987 contributed \$63.3 million to MTech's 1987 revenue.
- Internal cost controls resulting from a margin improvement plan implemented in 1986.

Revenue for the three months ending March 31, 1988 reached \$66.7 million, a 25% increase over \$53.3 million for the same period in 1987. Net income for the period rose 6%, from \$3.1 million to nearly \$3.3 million.

Since 1983 MTech has implemented an aggressive acquisition strategy in order to rapidly increase its market share and attain a leadership role in the financial data services marketplace. From 1983 through March 1988 MTech has acquired 17 companies. Acquisitions made by MTech since 1985 include the following:

- In March 1988, MTech completed the acquisition of Management Information Resources Inc. (MIR) of Lubbock (TX). MIR provides processing services to 44 financial institutions throughout the Texas panhandle. MIR had revenue of \$2.5 million for the fiscal year ending March 31, 1987.
- In March 1988, MTech completed the acquisition of Westmoreland Computer Services, Inc. of Greensburg (PA). Westmoreland provides processing services for eight banks located in southwestern Pennsylvania. The company had 30 employees at the time of the acquisition and revenue of \$2.1 million for the fiscal year ending June 30, 1987.
- In February 1988, MTech completed the acquisition of Security Couriers, a Dallas-based ground and air courier business for 1,000 financial institutions. Security Couriers, with 350 employees and 1987 revenue of \$13.3 million, now operates as a subsidiary of MTech.
- In January 1988, MTech entered into an agreement to acquire certain assets of Payment Services Group, Inc. of Glastonbury (CT), a provider of automated clearinghouse-based clearing and settlement systems and services. Payment Services had 1987 revenue of \$413,000. The products will be integrated into MTech's ACTION2000 product line. The agreement is due to close in May 1988.
- In October 1987, MTech completed the acquisition of Kalvar Corporation of Minneapolis (MN) for approximately \$18.9 million. Kalvar primarily provides computer output microfilm services through 13 service centers nationwide.
- In June 1987, MTech acquired Small Network Intercept Processor (SNIP) and Q-Up product rights from QuadStar, a Citicorp subsidiary. The software products are used to run ATM networks for smaller financial institutions.
- In September 1986, MTech acquired ICOMP Inc. of Rock Island (IL) for \$730,000. ICOMP provides processing services to 10 bank clients in Illinois, Ohio, Kansas, and Texas using Florida Software (Kirchman Corporation) products. MTech has acquired the perpetual right to offer processing services

using Florida Software's banking products and its future releases to MTech clients for a license fee.

- In June 1986, MTech acquired National Computer Analysts, Inc. of Princeton (NJ) for \$2.5 million. National Computer Analysts provides processing services to financial institutions.
- In June 1986, MTech acquired ECOM Systems, Incorporated of Memphis (TN) for \$2.5 million. ECOM Systems provides turnkey systems to credit unions. It now operates as MTech Credit Union Systems Corp, a subsidiary of MTech.
- In June 1985, MTech acquired NCI from General Electric Information Services Company. NCI subsequently became MTech Wholesale Banking Systems Corp, the developers of the ACTION2000 Wholesale products.

Divestitures made by MTech include the following:

- During 1985 MTech sold the MPACT trademark to MCorp for \$1.2 million. MTech has a perpetual, royalty-free license to use and sublicense the MPACT trademark for EFT services.
- In June 1986 MTech sold certain assets associated with its credit card processing services to MCorp for \$6.2 million. MTech maintained ownership of the ACTION2000 credit card software product line.
- Revenues from these operations were \$6.8 million in 1985 and \$3.2 million through May 1986.
- Prior to the sale, MCorp agreed to pay MTech \$1.1 million to compensate for MTech's continuing losses related to MCorp's credit card processing.

Prior to 1986, research and development costs were expensed as incurred. Effective January 1, 1986, MTech began capitalizing certain internally developed software costs. Research and development expenditures were approximately \$4.9 million (2% of revenue) in 1987, \$5.2 million (3% of revenue) in 1986, and \$11.9 million (7% of revenue) in 1985.

MTech is currently organized into the following units:

- The Financial Services Group provides remote computing and associated consulting and educational support services to commercial banks and thrifts. This group also markets IBM microcomputers and microcomputer software products.

- The Corporate Services Group consists of the following segments:
 - EFT Processing supports electronic funds transfer services, including the MPACT Network.
 - Financial Software and Services markets financial transaction processing software and credit union turnkey systems.
 - Commercial Services provides remote computing processing services to non-bank clients.
- MTech Resources Corp., a wholly owned subsidiary of MTech formed in early 1988, provides programming, installation, and conversion professional services to financial institutions and non-bank clients.

As of December 31, 1987, MTech had 2,770 employees, segmented as follows:

Sales and marketing	137
Research, development, and software product support	333
Computer operations and customer service	2,158
Administrative	<u>142</u>
	2,770

MTech's primary competitors, by service/product area, include the following:

- Bank and thrift processing: First Financial Management Corporation, Systematics, and Mellon Bank.
- EFT/ATM processing: First Financial Management Corporation, Mellon Bank, Service Card Systems, and Automatic Data Processing.
- EFT software: Applied Communications, Inc. (U.S. West), Shared Financial, Deluxe Data Systems, Stockholder Systems, SDM, Inc., Credit Card Software, Le Roux Pitts, Logica, National Data Corporation, and Advantage.
- Credit union software: Control Data Corporation, Users, Inc., World, Citicorp, Summit, Ultradata, Norrell, and CCA.

Key Products and Services

A three-year summary of MTech's source of revenue follows:

**MTECH CORP.
THREE-YEAR SOURCE OF REVENUE SUMMARY
(\$ millions)**

ITEM	FISCAL YEAR					
	1987		1986		1985	
	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
Bank processing (a)	\$176.1	76%	\$154.2	78%	\$131.4	79%
EFT services and software(c)	44.0	19%	35.2	18%	28.5	17%
Remote computing (non-bank)	12.0	5%	9.1	4%	6.3	4%
TOTAL	\$232.1	100%	\$198.5	100%	\$166.2	100%

(a) Includes MCorp affiliate revenue of approximately \$61.4 million in 1987, \$52.6 million in 1986, and \$47.5 million in 1985.

(b) Includes approximately \$5.2 million in revenue from Kalver's micrographics business, which was acquired in October 1987.

(c) Includes MCorp affiliate revenue of approximately \$3.7 million in 1987, \$3.8 million in 1986, and \$3.6 million in 1985.

MTech provides remote computing services to commercial banks, savings banks, and thrift institutions located in 21 states through 32 data centers.

- As of December 31, 1987, MTech provided processing services to 885 commercial banks (including MCorp affiliates) and 67 savings banks and thrift institutions.
- The company's historical marketing emphasis has been to provide these services to commercial banks, savings banks, and thrift institutions, generally with total assets of under \$500 million.
- In 1986 MTech began to direct increased efforts to larger institutions. MTech's current customers range from newly chartered banks to large MCorp affiliate banks having as much as \$7.4 billion in assets.

- The company now has 30 customers with assets greater than \$500 million, compared with 22 such customers in 1986.
- Institutions with assets under \$500 million accounted for approximately 52% of bank processing revenue in 1987 and continue to represent a large market for MTech's services.
- The total number of customer accounts processed for these financial institutions exceeded 10.7 million in 1987, compared to 12.9 million in 1986.
- During 1987, MTech's average monthly revenue per data processing contract (excluding MCorp affiliates) was approximately \$7,951, compared to \$7,400 in 1986.
- Processing services are generally offered under multi-year contracts, which in recent years have provided for initial three-year terms. Approximately 87% of MTech's processing contracts scheduled to expire during 1987 were renewed, generally for three-year terms.
- Major bank processing applications offered include the following:
 - The Deposit System allows a financial institution to offer a variety of deposit products to both commercial and individual customers. These products include checking accounts, savings accounts, certificates of deposit, tiered interest rate money market accounts, and IRA and Keogh accounts. A summary of a customer's deposit relationship is provided through cross-referencing of all types of deposit accounts. Cash management functions available include account analysis and balance reporting.
 - The Loan System processes the financial institution's consumer, commercial, and mortgage loan portfolios. Consumer loan processing services include automatic coupon book ordering, officer performance reporting, delinquency reporting, credit bureau interfaces, variable loan rate adjustment, credit life insurance calculation, and processing of automatic drafts from deposit accounts. Commercial loan processing services include additional capabilities such as complete commitment accounting, collateral tracking, and participant account reporting. Mortgage loan services include processing for adjustable rate loans, investor reporting, loan warehousing, and escrow accounts and analysis.

- The Financial Accounting and Reporting System provides complete general ledger, budgeting, financial accounting, and cost accounting capabilities for financial institutions. Asset and liability management systems, planning and forecasting systems, and other financial management services are also provided.
- The Customer Information System integrates all of a financial institution's banking applications into a single system and provides an information data base and the accounting and audit controls necessary to maintain the data base. All banking transactions are posted to an on-line general ledger, and customized internal reports detailing customer profitability, budget variances, and cost/profit center performance are generated.
- During 1985 MTech began offering back office services, including proofing and encoding, bulk statement filing, statement mailing, and truncation in order to accommodate additional check processing needs of its customers. Other services include account reconciliation processing, document storage, filming, stamping, archival storage, and statement rendering.
- In October 1987 MTech announced a joint marketing agreement with Manufacturers Hanover Trust Company of New York. Manufacturers Hanover will offer check processing and printing services and MTech will provide processing services and ATM network services primarily to Manufacturers Hanover's correspondent banks in the New York City area.
- During the third quarter of 1987 MTech signed a \$16.7 million data processing agreement with Farm Credit Banks of St. Louis (MO) to provide accounting processing services for the 80,000 loans for the Federal Land Bank, the Federal Intermediate Credit Bank, and the Bank for Cooperatives.
- During the second quarter of 1987 MTech announced an agreement with UCCEL (Computer Associates International, Inc.) to provide processing services to the National Bancshares Corporation (NBC) under MTech's Compute Utility concept. MTech will install 16 of UCCEL's INFOPOINT financial application products on its IBM-based service in Dallas and will provide ongoing processing support to NBC on a remote basis.

MTech provides microcomputer software and related products that permit access to MTech's mainframes on a remote basis. Products are available for the following applications:

Asset/Liability Management.
Financial Management Information.
Loan Origination and Document Printing.
Loan Loss Control.
Safe Deposit Box.
Call Report.
Back-Up Withholding (1099s).
General Ledger.
Fixed Asset Accounting.
Planning & Budgeting.

MTech provides EFT services to financial institutions and retailers through its proprietary MPACT Network and on-line electronic banking software products.

- The MPACT Network was established in 1979 and comprises over 645 member financial institutions and companies that have entered into long-term processing and participation contracts with MTech.
- The network includes approximately 1,226 MPACT ATMs and approximately 2.5 million MPACT debit cards issued to customers of member financial institutions located primarily in Texas, Louisiana, Arkansas, New Mexico, Oklahoma, West Virginia, and Massachusetts.
- In September 1987 thirteen financial institutions located throughout Massachusetts, Connecticut, and Vermont, representing 100,000 checking accounts, contracted to become members of MPACT.
- MPACT has interface relationships with 24 other regional and national networks such as CIRRUS, PULSE, American Express, and DISCOVER, which allow approximately 50 million additional holders of debit cards access to the MPACT Network and make over 15,000 additional ATMs available to MPACT cardholders.
- In March 1988 MTech signed a reciprocal sharing agreement with the HONOR network. Cardholders of MPACT and HONOR will be able to use the other network's machines by the fall of 1988.
- In December 1987, approximately 6.7 million billable transactions were processed within the MPACT network, the same as in December 1986.

- During 1987 the average monthly revenue per MPACT customer was approximately \$2,800.

MTech's financial transaction processing software includes systems for EFT processing, credit card processing, wire transfer, cash management, and ACH processing. Most software products are marketed both domestically and internationally.

- Products include:

ACTION2000 ATM Plus.
ACTION2000 POS Plus.
ACTION2000 Credit Card.
ACTION2000 Merchant Accounting System.
ACTION2000 Card Management.
ACTION2000 ACH PLUS.
ACTION2000 Super Switch.
ACTION2000 Cash Management Plus.
ACTION2000 MoneyNet.
SNIP (Small Network Intercept Processor).
EBT (Electronic Benefits Transfer).

- The company's ACTION2000 EFT software includes an integrated line of systems that allow a user to operate an ATM or POS network. The subsystems can be used separately or together to drive ATM and POS terminals, route transactions within a network or into other networks (a "switch"), and provide transaction reporting and authorization.
- The software is compatible with IBM mainframes, the IBM System/88, and Tandem and Stratus computers.
- ACTION 2000 EFT software is marketed to financial institutions, to organizations operating ATM or POS networks, and to various other commercial users such as large oil companies, insurance companies, and retailers.
- As of December 1987 there were 80 EFT ACTION2000 licensees, including MasterCard International, The Travelers Companies, Lucky Stores, Exxon Corporation, Chevron U.S.A., and Goldome Savings Bank.
- Certain regional EFT networks, including the Avail, Gulfnet, Relay, and Owl networks, have licensed the ACTION2000 switch software to operate those networks. This software is also marketed outside the U.S. by IBM World Trade under the IBM logo and in several other international markets by MTech foreign distributors.

- MTEch markets ACTION2000 credit card software, an IBM-based system for processing transactions involving bank credit cards, debit cards, private label cards, major purchase cards, premium cards, recovery accounts, and line of credit accounts. The system also handles multi-plan and multi-bank processing.
 - ACTION2000 credit card software is marketed to financial institutions, to organizations operating ATM or POS networks, and to various other commercial users, such as large oil companies, insurance companies, and retailers.
 - As of December 1987, there were 36 licensees of the ACTION2000 credit card system, compared to 32 licensees in December 1986.
- ACTION2000 MoneyNet wire transfer software, designed for Tandem fault tolerant computers, allows financial institutions and businesses to transfer funds electronically between various accounts or institutions instantaneously.
 - MoneyNet is marketed to the top 300 largest financial institutions and is certified by all 12 Districts of the Federal Reserve System.
 - In December 1987 MTEch began marketing MoneyNet Micro, a similar, less expensive and lower volume wire transfer system, to smaller financial institutions. This system operates on Tandem LXX and NCR Tower computers.
 - As of December 1987 there were 68 licensees of the MoneyNet system, compared to 48 licensees in December 1986. Clients include First Bank System, MCorp, Sun Banks, Mellon Bank, and National City Corporation.
- ACTION2000 Cash Management Plus is an in-house system that allows financial institutions to remarket information reporting and transaction initiation services to corporate clients, while reducing timesharing costs. The system operates on IBM, Tandem, or hybrid configurations.
- ACTION2000 ACH PLUS provides electronic cash management and funds transfer services. System capabilities include an advanced, third generation ACH processor that originates and receives transactions (IBM mainframes and PCs and Tandem systems); PC-based transaction initiation; and PC-based transaction communications. The ACH products were obtained through the acquisition of Payment Services Group in January 1988.

- During the first quarter of 1987 MTech signed the largest software contract in the company's history with First Tennessee Bank of Memphis (TN) for MTech's fully integrated ACTION2000 product.
- During 1987 MTech, through its licensed London distributor, Software Sciences Ltd., reached an agreement with the British Post Office to install ACTION2000 Super Switch and Card Management software in 250 British post office locations.
- MTech's credit union turnkey systems, acquired with ECOM Systems in 1986, integrate financial applications for credit unions. The software runs on DEC computers. As of December 1987 there were 84 licensees of credit union systems.

In addition to the processing services and EFT services and software described, MTech provides utility processing.

- MTech provides remote computing services using two IBM 3090s located in Irving (TX). These services are generally offered to users requiring supplemental processing resources, using their own software or third-party software.
- These services are primarily used by accounting firms for software development or to process the firm's applications for their customers, or other software development companies.
- As of December 1987, MTech provided these services to 53 customers, compared to 42 customers as of December 1986. Clients include Price Waterhouse, Arthur Andersen, Diners Club, American Legal Systems, Sabine Corporation, and various other oil/gas firms and software developers.

In connection with its processing services, MTech resells to its customers teller terminals, CRT terminals, MICR capture devices, printers, peripheral equipment, ATMs, and other equipment. The company also provides associated hardware maintenance services.

With the acquisition of Kalvar in October 1987, MTech has expanded its micrographics processing services. As of December 31, 1987, MTech was offering these services to approximately 4,500 customers nationally, including financial institutions. Approximately 80% of Kalvar's service revenue in 1987 was derived from contracts having one to two year terms.

Industry Markets

The majority of MTech's 1987 revenue was derived from the banking and financial services industry. Clients include commercial banks, savings banks, thrift insitutions, and credit unions. MTech also markets to retailers, to the oil and gas industry, government agencies, and to major accounting firms.

Geographic Markets

Over 99% of MTech's 1987 revenue was derived from the U.S. Less than 1% of revenue was derived from software sales outside the U.S.

MTech has bank processing customers located in 21 states serviced from 34 data centers.

MTech has software distributorship agreements with foreign distributors, including Sligos (Paris), PAXUS Financial Systems PTY, Ltd. (Sidney), and Software Sciences, Ltd. (London). ACTION 2000 software is also marketed outside the U.S. by IBM World Trade under the IBM logo.

Computer Hardware and Software

MTech owns or leases approximately 32 IBM mainframes and 12 Unisys, 14 Tandem, and 5 DEC computers.

MTech's central data center, which is subleased from MCorp, was relocated to Irving (TX) during 1986.

- MTech also leases facilities for eight other data centers from MCorp.
- MTech's other 25 data centers are located in Illinois, Louisiana, Massachusetts, New Jersey, Ohio, Oklahoma, Texas, Virginia, and West Virginia. Nineteen are leased and six are owned.

Processing clients access MTech's data centers via leased lines.

COMPANY PROFILE

MTECH
1712 Commerce Street
P.O. Box 660666
Dallas, TX 75266
(214) 742-7100

Darwin Deason, Chairman and CEO
Subsidiary of MCorp
Total Employees: 2,600
Total Revenue, Fiscal Year End
12/31/85: \$165,100,000
Total Noncaptive Computer Services
Revenue: \$99,900,000

THE COMPANY

- MTech provides processing services, software products, and professional services primarily to the banking and finance industry. MTech is the developer and operator of MPACT, an automatic teller machine (ATM) network, and MPACT EXPRESS, a point of sale (POS) network marketed to the retail industry.
 - MTech was founded in 1968 as Affiliated Computer Systems (ACS), a private corporation that provided processing services to commercial banks. In 1975 ACS was acquired by Mercantile Texas Corporation, a bank holding company, for \$2.5 million. ACS subsequently expanded its products and services to commercial and thrift financial institutions, including savings and loans, mutual savings banks, and credit unions.
 - On October 10, 1984 MCorp was formed as a result of a merger of Mercantile Texas Corporation and Southwest Bancshares, Inc. and ACS was renamed MTech.
- MTech's 1985 total revenue reached \$165.1 million, a 42% increase over 1984 revenue of \$116.5 million. A four-year financial summary follows:

MTECH
FOUR-YEAR FINANCIAL SUMMARY
(\$ millions)

ITEM \ FISCAL YEAR	1985	1984	1983	1982
Total revenue	\$ 165.1	\$ 116.5	\$ 83.3	\$ 54.8
. Percent increase from previous year	42%	40%	52%	54%
Income before taxes	\$ 10.4	\$ 9.9	\$ 5.1	\$ 2.4
. Percent increase from previous year	5%	94%	113%	267%
Net income	\$ 5.6	\$ 7.0	\$ 3.3	\$ 2.0
. Percent increase (decrease) from previous year	(20%)	112%	65%	243%

- Recent acquisitions made by MTech include the following:
 - Effective December 1985, MTech acquired Ohio Valley Data Control, Inc. of Belpre (OH).
 - Ohio Valley Data Control provided processing services to financial institutions in West Virginia and Ohio.
 - Ohio Valley Data Control now operates as MTech Ohio Valley in Ohio and MTech Kanawha Valley in West Virginia within the Financial Services Division of MTech.
 - Effective September 1985, MTech acquired Network Consultants, Inc. of Chicago (IL) from General Electric.
 - Network Consultants provided wire-transfer and cash management software products to the banking industry.
 - The company had approximately 50 employees at the time of acquisition.
 - Network Consultants now operates as MTech NCI within the Electronic Banking Division of MTech.
 - Effective September 1985, MTech acquired First Chicago Data Corporation of Chicago from First Chicago Corporation.
 - First Chicago Data provided processing services to the financial industry in the Chicago area.

- The company now operates as MTech Midwest within the Financial Services Division of MTech.
- In March 1985 MTech acquired the Electronic Banking Systems (EBS) Division of Docutel/Olivetti Corporation. Terms of the acquisition were not disclosed.
 - EBS provides financial institutions with facilities management services for the development, establishment, operation, and funding of neutral shared off-premise ATM networks.
 - EBS had approximately 20 employees at the time of the acquisition.
 - The operations of EBS have been merged with MTech's Electronic Banking Division.
- In November 1984 MTech acquired Data Information Services, Inc. (DIS) of Dallas (TX).
 - DIS provides consulting and training to the banking and finance industry and has approximately four employees. The acquisition was accounted for as a purchase.
 - DIS has been renamed MTech/DIS and now operates as a wholly owned subsidiary of MTech.
- On June 8, 1984, the company acquired the Financial Services Division of Datatel, Inc. (now known as MTech Mid-Atlantic) with centers located in Alexandria (VA) and Bluefield and Clarksburg (WV). There are currently over 80 employees.
- On April 18, 1984, MTech acquired Savings Management Computer Corporation, located in Boston, which provides processing services to savings banks. It was renamed MTech New England and has over 80 employees.
- In March 1984 Thunderbird Automation Group, Inc. of Tulsa (OK) was acquired.
 - The company develops and markets microcomputer software for financial institution information management. It had approximately 10 employees at the time of the acquisition.
 - Thunderbird Automation now operates as MTech Micro Services, a division within the Financial Services Division.
- In addition to the companies mentioned above, during the past two years MTech has assumed facilities management of the data centers of three banks. Subsequent to these acquisitions, the banks have generally become MTech processing clients.

- MTech management estimates 1986 total revenue will exceed \$200 million.
- MTech currently has 43 data centers, subsidiaries, and sales offices in 16 states. The company is organized into three major divisions as follows:
 - The Financial Services Division provides remote computing and associated consulting and educational support services to commercial banks and thrifts. This division also markets IBM microcomputers and micro-computer software.
 - The Electronic Banking Division is responsible for the marketing and operations of MTech's MPACT proprietary ATM network and the MPACT EXPRESS POS network, as well as switching relationships with other networks. This division also markets and supports EFT application software products.
 - The Corporate Services Division provides processing services to MCorp's member banks and utility processing to commercial industry clients (Commercial Services Division).

KEY PRODUCTS AND SERVICES

- MTech's 1985 noncaptive computer services revenue reached an estimated \$99.9 million, a 27% increase over \$78.8 million for 1984. A three-year summary of source of revenue follows:

MTECH
THREE-YEAR SOURCE OF REVENUE SUMMARY
(\$ millions)

FISCAL YEAR ITEM	1985		1984		1983	
	Revenue	Percent of Total	Revenue	Percent of Total	Revenue	Percent of Total
Noncaptive computer services						
• Remote computing	\$ 71.4	43%	\$ 56.6	49%	\$ 34.0	41%
• EFT processing	19.8	12	15.6	13	13.5	16
• Software products	<u>8.7</u>	<u>5</u>	<u>6.6</u>	<u>6</u>	<u>4.6</u>	<u>6</u>
Subtotal	\$ 99.9	60%	\$ 78.8	68%	\$ 52.1	63%
Captive computer services (a)	\$ 46.2	28%	\$ 26.8	23%	\$ 21.3	26%
Hardware sales (b)	\$ 15.3	10%	\$ 9.5	8%	\$ 6.2	7%
Miscellaneous	\$ <u>3.2</u>	<u>2%</u>	\$ <u>1.4</u>	<u>1%</u>	\$ <u>3.7</u>	<u>4%</u>
Total revenue	\$ 165.1	100%	\$ 116.5	100%	\$ 83.3	100%

- (a) Includes processing services provided through the Corporate Services Division to MCorp member banks.
- (b) Includes sales and maintenance of terminals, CRTs, ATMs, and IBM micro-computers.
- The majority of MTech's remote computing services was derived from inter-active processing services provided to over 600 commercial banks and 150 thrifts located in 11 U.S. states.
 - MTech currently processes eight million accounts and more than 120 million items monthly.
 - Applications available include the following:
 - Management Information and Financial Control.
 - Financial Accounting: General ledger; automatic entries from P.O.D. (Proof of Deposit) and MPACT; cost center/profit center reporting; and budget variance.
 - Customer Information File (CIF): Customer account integration; suggested rate; cross sell marketing information; online alpha inquiry/name and address.
 - Audit Controls: audit confirmations and reporting; regulatory examination reports.
 - Commercial and Personal Loan System.
 - Personal: Add-on interest installments; credit life; automatic coupon book ordering; officer performance reporting; delinquency reporting; credit bureau interface; single interest insurance; variable rate loans; indirect liability accounting; automatic drafts from deposit accounts; post payments online.
 - Personal Lending System: Simple interest installments; multiple rebate methods; multiple insurance options; irregular payment schedule; transaction backdating.
 - Commercial: Rate ceilings and floors; variable rate loans; multiple prime rate parameters; indirect liability accounting; post payments online.
 - Commercial Lending System: Commitment accounting; participant accounting; officer performance reporting; revolving credit lines; transaction backdating.

Deposit System.

- NOW accounts.
 - Super NOW accounts.
 - Money Market accounts.
 - Tiered rates.
 - Variable interest.
 - Online transactions.
 - Combined statements.
 - Descriptive statements with disclosure compliance.
 - Bulk filing.
 - Corporate cash management, including balance reporting, "paid item" account reconciliation, concentration (zero balance) accounts, and account analysis.
 - Kiting suspect reports.
 - Balance fluctuation reporting.
 - Automatic drafts.
 - Customized service charge routines.
 - Certificate of deposit accounting.
 - Savings accounting.
 - IRA tracking.
 - Online teller machines.
 - Signature online.
 - Proof deposit system.
 - Daily exception item pull.
 - Float capture and analysis, including deposit item counts and multiple transit distribution.
- MTech derived approximately \$7 million in 1985 from utility processing services provided by the Commercial Services Division, compared to \$6 million in 1984.
 - Approximately 35 clients in the oil and gas industries, government agencies, and financial institutions, access the division's data center in Dallas.
 - The data center operates IBM computers, running under DOS and MVS.
 - MTech developed and operates MPACT, one of the nation's largest shared ATM networks for electronic funds transfer.
 - During 1985-1986 MPACT ATMs handled over 70 million transactions. Over two million MPACT cards have been issued to customers in Texas, Oklahoma, and New Mexico. As of February 1986, there were 542 participating financial institutions and over 1,100 ATMs installed.
 - MTech is working with First Signature Bank for the operation of a national ATM switch. MTech will be the only processor in the country to interface with CIRRUS and Plus networks.

- In early 1985 the MPACT network was expanded beyond the Southwest with a proprietary network involving 14 ATMs in West Virginia converting to MPACT. MTech also has agreements with two other banks involving a total of four ATMs.
- During the first quarter of 1986 MTech installed an additional 70 MPACT ATMs in Safeway supermarkets.
- MPACT features include the following:
 - The MPACT Operations Maintenance System (MOMS) monitors every ATM in the MPACT network 24 hours a day and instantly reports any changes in their operational status.
 - Management information systems produce operational profile reports for each ATM identifying transaction volumes, user mix, peak usage times, and unactivated account information.
 - Nationwide interchange capabilities permit MPACT customers to use their cards in American Express Travelers Cheque machines and American Express green and gold cardholders can use their card in any MPACT machine.
 - MTech is a member of CIRRUS, a national ATM network. Under this program 42 million customers from 14 banking organizations covering 46 states and Canada have access to over 10,000 ATMs.
 - Switch capabilities allow MPACT to share with other ATM programs, such as Pulse and MoneyMaker in Texas and Express-Net in Arkansas. As a result, MPACT cardholders have access to an additional 1,700 ATMs. MTech also has agreements with regional MasterCard and VISA processors that allow those customers to use their cards in MPACT machines for cash advances.
 - MPACT can interface with MTech's processing services or operate independently.
- MTech also provides marketing and installation services to MPACT clients as well as ATM network management.
- In 1984 MTech introduced its MPACT EXPRESS point of sale (POS) program in Texas.
 - MTech has agreements with over 165 retailers that have contracted to install over 10,000 POS terminals that will accept an MPACT debit card for payment of goods and services.
 - Participating merchants range from local, one-store operators to large chain retailers and include Mobil Oil, Exxon, AAMCO Transmissions,

Pacific Stereo, Centennial Liquor, Southwest Airlines, Kroger, Tom Thumb Supermarkets, as well as clothing stores and entertainment ticket offices.

- Approximately \$5.4 million of MTECH's 1985 revenue was derived from EFT software product sales, compared to \$5 million in 1984. These products, acquired from Information Processing Corporation in April 1983, include the following:
 - Action 2000 ATM (formerly the Universal ATM System) provides online control and processing of transactions from the ATMs of major vendors, including IBM, Diebold, NCR, and Docutel.
 - The system runs on IBM 370, 30XX, and 43XX computers under OS, DOS, and MVS, and on Tandem computers.
 - Transactions can be posted in a real time or memo post mode.
 - Options are defined through multibank System Control Records, allowing for different capabilities between owning institutions and using institutions via interchange.
 - Switching to major debit card authorization networks is also supported. Other features include settlement reporting, store and forward, and a "after hours" processing.
 - There are currently over 90 systems installed.
 - Action 2000 Super Switch (formerly Tandem EFT Super Switch) allows a financial institution to provide EFT switching between itself and other financial institutions as well as providing an interface to any national EFT switch network of which it may be a member.
 - Action 2000 Super Switch runs on IBM computers operating under CICS and on Tandem NonStop systems.
 - There are currently over 20 systems installed.
 - Action 2000 Point of Sale (formerly the Universal Point of Sale System) provides for the support of credit, debit, and travel and entertainment transactions, as well as support for check guarantee services, preapproval processing, and check verification.
 - The system runs on Tandem NonStop computers.
 - There are currently 10 systems installed.
 - The Action 2000 Credit Card System (formerly the "Only One" Credit Card System) provides credit card processing. The system runs on IBM 370, 30XX, and 43XX computers.

- Approximately \$1.2 million of MTECH's 1985 revenue was derived from MTECH Micro Services' microcomputer software sales to the banking and finance industry, compared to \$1.6 million in 1984.
- The target market for these products includes MTECH's existing processing clients.
- The software runs on IBM PC, PC-XT, and PC-AT microcomputers.
- Applications available include the following:
 - Asset/Liability Management.
 - General ledger.
 - Planning and control.
 - Loan Pricing--Customer Profitability.
 - Financial Statement Analysis.
 - Financial Statement Tickler.
 - Inventory.
 - Personnel.
 - Safe Deposit.
 - Real Estate Documentation Tickler.
 - Dow Jones Portfolio Management.
 - Trust Accounting.
 - Office Call Tracking.
 - Stockholder Accounting.
 - Board Reports.
 - Graphics.
 - Spreadsheets.
 - Word Processing--Mailing List Maintenance.
 - Personnel Management.
 - Accounts Payable.
 - Lockbox Recordkeeping.
 - Letter of Credit Accounting.
- MTECH also provides networking capabilities via its MIS-ON-A-MICRO product. The software permits downloading of information from the MTECH mainframe to a microcomputer in the client bank, or uploading of information from the bank's microcomputer to the MTECH mainframe. The two modules of MIS-ON-A-MICRO include the following:
 - Financial Management allows the preparation of daily financial data and comparisons with yesterday's figures and tomorrow's projections.
 - Customer Profitability defines bank-customer relationships from a total profitability standpoint. A monitoring device defines what the bank wants as customer yield, and a report is prepared analyzing how to bring up that yield or profitability to desired levels.

INDUSTRY MARKETS

- The majority of MTech's 1985 noncaptive computer services revenue was derived from the banking and finance industry. MTech also provides services to retailers through client banks, to the oil and gas industry, and to government agencies.

GEOGRAPHIC MARKETS

- Over 99% of MTech's noncaptive computer services was derived from the U.S. Less than 1% of revenue was derived from software sales outside the U.S. Approximately 90% of revenue was derived from the Southwest.
- MTech has 43 data centers, subsidiaries, and sales offices in 16 states: Arkansas, California, Colorado, Georgia, Illinois, Louisiana, Massachusetts, Minnesota, New Jersey, New York, Ohio, Oklahoma, Tennessee, Texas, Virginia, and West Virginia. The company has plans to expand its operations throughout the U.S.

COMPUTER HARDWARE AND SOFTWARE

- MTech currently operates data centers in the following U.S. cities:

- Abilene (TX).
- Alexandria (VA).
- Austin (TX).
- Beckley (WV).
- Belpre (OH).
- Bluefield (WV).
- Boston (MA).
- Chicago (IL).
- Clarksburg (WV).
- Corpus Christi (TX).
- Dallas (TX).
- Dunbar (WV).
- Fort Smith (AK).
- Fort Worth (TX).
- Golden (CO).
- Houston (TX).
- Jacksonville (TX).
- Lubbock (TX).
- McAllen (TX).
- New York City (NY).
- Oklahoma City (OK).
- Princeton (NJ).
- San Antonio (TX).
- Sherman (TX).
- Shreveport (LA).
- Texarkana (TX).
- Tyler (TX).

- Tulsa (OK).
 - Victoria (TX).
 - Waco (TX).
 - Wheeling (WV).
 - Wichita Falls (TX).
- MTech has computers from various manufacturers installed at its data centers. The Dallas data center has primarily IBM equipment.
 - Bank and thrift processing clients access MTech data centers via leased lines. Distributed processing via microcomputers is currently available to clients by direct dial, with plans for leased line access. Ultimately, micro-computer users will be able to access MTech's data center via a proprietary network currently being developed by MTech.



COMPANY PROFILE

MTECH
1712 Commerce Street
P.O. Box 660666
Dallas, TX 75266
(214) 742-7100

Darwin Deason, Chairman and CEO
Subsidiary of MCorp
Total Employees: 2,600
Total Revenue, Fiscal Year End
12/31/85: \$165,100,000
Total Noncaptive Computer Services
Revenue: \$99,900,000

THE COMPANY

- MTEch provides processing services, software products, and professional services primarily to the banking and finance industry. MTEch is the developer and operator of MPACT, an automatic teller machine (ATM) network, and MPACT EXPRESS, a point of sale (POS) network marketed to the retail industry.
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- MTEch's 1985 total revenue reached \$165.1 million, a 42% increase over 1984 revenue of \$116.5 million. A four-year financial summary follows:

MTECH
FOUR-YEAR FINANCIAL SUMMARY
(\$ millions)

ITEM \ FISCAL YEAR	1985	1984	1983	1982
Total revenue	\$ 165.1	\$ 116.5	\$ 83.3	\$ 54.8
• Percent increase from previous year	42%	40%	52%	54%
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• Percent increase from previous year	5%	94%	113%	267%
Net income	\$ 5.6	\$ 7.0	\$ 3.3	\$ 2.0
• Percent increase (decrease) from previous year	(20%)	112%	65%	243%

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 - Ohio Valley Data Control provided processing services to financial institutions in West Virginia and Ohio.
 - Ohio Valley Data Control now operates as MTech Ohio Valley in Ohio and MTech Kanawha Valley in West Virginia within the Financial Services Division of MTech.
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 - EBS provides financial institutions with facilities management services for the development, establishment, operation, and funding of neutral shared off-premise ATM networks.
 - EBS had approximately 20 employees at the time of the acquisition.
 - The operations of EBS have been merged with MTech's Electronic Banking Division.
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KEY PRODUCTS AND SERVICES

- MTech's 1985 noncaptive computer services revenue reached an estimated \$99.9 million, a 27% increase over \$78.8 million for 1984. A three-year summary of source of revenue follows:

MTECH
THREE-YEAR SOURCE OF REVENUE SUMMARY
(\$ millions)

FISCAL YEAR ITEM	1985		1984		1983	
	Revenue	Percent of Total	Revenue	Percent of Total	Revenue	Percent of Total
Noncaptive computer services						
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Subtotal	\$ 99.9	60%	\$ 78.8	68%	\$ 52.1	63%
Captive computer services (a)	\$ 46.2	28%	\$ 26.8	23%	\$ 21.3	26%
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- (a) Includes processing services provided through the Corporate Services Division to MCorp member banks.
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 - Money Market accounts.
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 - MTech has agreements with over 165 retailers that have contracted to install over 10,000 POS terminals that will accept an MPACT debit card for payment of goods and services.
 - Participating merchants range from local, one-store operators to large chain retailers and include Mobil Oil, Exxon, AAMCO Transmissions,

Pacific Stereo, Centennial Liquor, Southwest Airlines, Kroger, Tom Thumb Supermarkets, as well as clothing stores and entertainment ticket offices.

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 - Switching to major debit card authorization networks is also supported. Other features include settlement reporting, store and forward, and a "after hours" processing.
 - There are currently over 90 systems installed.
 - Action 2000 Super Switch (formerly Tandem EFT Super Switch) allows a financial institution to provide EFT switching between itself and other financial institutions as well as providing an interface to any national EFT switch network of which it may be a member.
 - Action 2000 Super Switch runs on IBM computers operating under CICS and on Tandem NonStop systems.
 - There are currently over 20 systems installed.
 - Action 2000 Point of Sale (formerly the Universal Point of Sale System) provides for the support of credit, debit, and travel and entertainment transactions, as well as support for check guarantee services, preapproval processing, and check verification.
 - The system runs on Tandem NonStop computers.
 - There are currently 10 systems installed.
 - The Action 2000 Credit Card System (formerly the "Only One" Credit Card System) provides credit card processing. The system runs on IBM 370, 30XX, and 43XX computers.

- Approximately \$1.2 million of MTEch's 1985 revenue was derived from MTEch Micro Services' microcomputer software sales to the banking and finance industry, compared to \$1.6 million in 1984.
- The target market for these products includes MTEch's existing processing clients.
- The software runs on IBM PC, PC-XT, and PC-AT microcomputers.
- Applications available include the following:
 - Asset/Liability Management.
 - General ledger.
 - Planning and control.
 - Loan Pricing—Customer Profitability.
 - Financial Statement Analysis.
 - Financial Statement Tickler.
 - Inventory.
 - Personnel.
 - Safe Deposit.
 - Real Estate Documentation Tickler.
 - Dow Jones Portfolio Management.
 - Trust Accounting.
 - Office Call Tracking.
 - Stockholder Accounting.
 - Board Reports.
 - Graphics.
 - Spreadsheets.
 - Word Processing—Mailing List Maintenance.
 - Personnel Management.
 - Accounts Payable.
 - Lockbox Recordkeeping.
 - Letter of Credit Accounting.
- MTEch also provides networking capabilities via its MIS-ON-A-MICRO product. The software permits downloading of information from the MTEch mainframe to a microcomputer in the client bank, or uploading of information from the bank's microcomputer to the MTEch mainframe. The two modules of MIS-ON-A-MICRO include the following:
 - Financial Management allows the preparation of daily financial data and comparisons with yesterday's figures and tomorrow's projections.
 - Customer Profitability defines bank-customer relationships from a total profitability standpoint. A monitoring device defines what the bank wants as customer yield, and a report is prepared analyzing how to bring up that yield or profitability to desired levels.

INDUSTRY MARKETS

- The majority of MTEch's 1985 noncaptive computer services revenue was derived from the banking and finance industry. MTEch also provides services to retailers through client banks, to the oil and gas industry, and to government agencies.

GEOGRAPHIC MARKETS

- Over 99% of MTEch's noncaptive computer services was derived from the U.S. Less than 1% of revenue was derived from software sales outside the U.S. Approximately 90% of revenue was derived from the Southwest.
- MTEch has 43 data centers, subsidiaries, and sales offices in 16 states: Arkansas, California, Colorado, Georgia, Illinois, Louisiana, Massachusetts, Minnesota, New Jersey, New York, Ohio, Oklahoma, Tennessee, Texas, Virginia, and West Virginia. The company has plans to expand its operations throughout the U.S.

COMPUTER HARDWARE AND SOFTWARE

- MTEch currently operates data centers in the following U.S. cities:

- Abilene (TX).
- Alexandria (VA).
- Austin (TX).
- Beckley (WV).
- Belpre (OH).
- Bluefield (WV).
- Boston (MA).
- Chicago (IL).
- Clarksburg (WV).
- Corpus Christi (TX).
- Dallas (TX).
- Dunbar (WV).
- Fort Smith (AK).
- Fort Worth (TX).
- Golden (CO).
- Houston (TX).
- Jacksonville (TX).
- Lubbock (TX).
- McAllen (TX).
- New York City (NY).
- Oklahoma City (OK).
- Princeton (NJ).
- San Antonio (TX).
- Sherman (TX).
- Shreveport (LA).
- Texarkana (TX).
- Tyler (TX).

- Tulsa (OK).
 - Victoria (TX).
 - Waco (TX).
 - Wheeling (WV).
 - Wichita Falls (TX).
- MTech has computers from various manufacturers installed at its data centers. The Dallas data center has primarily IBM equipment.
 - Bank and thrift processing clients access MTech data centers via leased lines. Distributed processing via microcomputers is currently available to clients by direct dial, with plans for leased line access. Ultimately, micro-computer users will be able to access MTech's data center via a proprietary network currently being developed by MTech.



COMPANY PROFILE

MTECH

1712 Commerce Street
P.O. Box 660666
Dallas, TX 75266
(214) 742-7100

Darwin Deason, Chairman and CEO
Subsidiary of MCorp
Total Employees: 2,000
Total Revenue, Fiscal Year End
12/31/84: \$116,500,000
Total Noncaptive Computer Services
Revenue: \$78,800,000*

THE COMPANY

- MTech provides processing services, software products, and professional services primarily to the banking and finance industry. MTech is the developer and operator of MPACT, an automatic teller machine (ATM) network, and MPACT Express, a point of sale (POS) network marketed to the retail industry. In May 1984 the company became a value-added-remarketer (VAR) for the IBM PC/XT microcomputer.
 - MTech was founded in 1968 as Affiliated Computer Systems (ACS), a private corporation that provided processing services to commercial banks. In 1975 ACS was acquired by Mercantile Texas Corporation, a bank holding company, for \$2.5 million. ACS subsequently expanded its products and services to commercial and thrift financial institutions, including savings and loans, mutual savings banks, and credit unions.
 - On October 10, 1984 MCorp was formed as a result of a merger of Mercantile Texas Corporation and Southwest Bancshares, Inc. and ACS was renamed MTech.
- MTech's 1984 total revenue reached \$116.5 million, a 40% increase over 1983 revenue of \$83.3 million. A three-year financial summary follows:

*INPUT estimate

MTECH
THREE-YEAR FINANCIAL SUMMARY (a)
(\$ millions)

ITEM \ FISCAL YEAR	1984	1983	1982
Total revenue	\$ 116.5	\$ 83.3	\$ 54.8
• Percent increase from previous year	40%	52%	54%
Income before taxes	\$ 9.9	\$ 5.1	\$ 2.4
• Percent increase from previous year	94%	113%	267%
Net income	\$ 7.0	\$ 3.3	\$ 2.0
• Percent increase from previous year	112%	65%	243%

(a) Financials have been restated to reflect the acquisition of several companies and data centers, as described below.

- MTech acquisitions during the last two years include the following:
 - In March 1985 MTech acquired the Electronic Banking Systems (EBS) Division of Docutel/Olivetti Corporation. Terms of the acquisition were not disclosed.
 - EBS provides financial institutions with facilities management services for the development, establishment, operation, and funding of neutral shared off-premise ATM networks.
 - EBS had approximately 20 employees at the time of the acquisition.
 - The operations of EBS are being merged with MTech's Electronic Banking Division.
 - In November 1984 MTech acquired Data Information Services, Inc. (DIS) of Dallas (TX).
 - DIS provides consulting and training to the banking and finance industry and has approximately four employees. The acquisition was accounted for as a purchase.
 - DIS has been renamed MTech/DIS and now operates as a wholly owned subsidiary of MTech.

- On June 8, 1984, the company acquired the Financial Services Division of Datatel, Inc. (now known as MTech Mid-Atlantic) with centers located in Alexandria (VA) and Bluefield and Clarksburg (WV). There are currently over 80 employees.
- On April 18, 1984, MTech acquired Savings Management Computer Corporation, located in Boston, which provides processing services to savings banks. It was renamed MTech New England and has over 80 employees.
- In March 1984 Thunderbird Automation Group, Inc. of Tulsa (OK) was acquired.
 - The company develops and markets microcomputer software for financial institution information management. It had approximately 10 employees at the time of the acquisition.
 - Thunderbird Automation now operates as MTech Micro Services, a division within the Financial Services Division.
- In December 1983 the company acquired SNS, Inc., a bank processing services company located in Corpus Christi (TX). There are currently over 60 employees and the company operates as MTech Corpus Christi.
- Effective April 18, 1983 MTech acquired Information Processing Corporation (IPC) of Dallas (TX).
 - IPC provided software for electronic funds transfer applications and processing services to oil and gas companies, utilities, and government agencies.
 - IPC had approximately 95 employees at the time of the acquisition.
 - The software product operations of IPC have been merged with the Electronic Banking Division. Processing services are now provided through the Commercial Services Division of MTech's Corporate Services Division.
- Effective January 26, 1983 the company acquired Houston Information Systems, Inc. of Houston.
 - Houston Information Systems provides thrift processing services and has approximately 55 employees.
 - Houston Information Systems now operates as MTech Thrift Services, a wholly owned subsidiary of MTech within the Financial Services Division.

- Effective January 15, 1983 Hale Enterprises, Inc. of Tulsa was acquired.
 - Hale Enterprises provides financial institution data processing and EFT networking services and has approximately 83 employees.
 - Hale Enterprises now operates as MTech Oklahoma, a wholly owned subsidiary of MTech.
- In addition to the companies mentioned above, during the past two years MTech has assumed facilities management of the data centers of three banks. Subsequent to these acquisitions, the banks have generally become MTech processing clients.
- MTech management estimates 1985 total revenue will exceed \$150 million.
- MTech currently has 36 data centers, subsidiaries, and sales offices in 11 states. The company is organized into three major divisions as follows:
 - The Financial Services Division provides remote computing and associated consulting and educational support services to commercial banks and thrifts. This division also markets IBM microcomputers and micro-computer software to MTech processing clients.
 - The Electronic Banking Division is responsible for the marketing and operations of MTech's MPACT proprietary ATM network and the MPACT Express POS network. This division also markets and supports EFT applications software products.
 - The Corporate Services Division provides processing services to MCorp's member banks and utility processing to commercial industry clients (Commercial Services Division).

KEY PRODUCTS AND SERVICES

- MTech's 1984 noncaptive computer services revenue reached an estimated \$78.8 million, a 51% increase over \$52.1 million for 1983. A three-year summary of source of revenue follows:

MTECH
THREE-YEAR SOURCE OF REVENUE SUMMARY
(\$millions)

	1984		1983		1982	
	<u>Revenue</u>	<u>Percent of Total</u>	<u>Revenue</u>	<u>Percent of Total</u>	<u>Revenue</u>	<u>Percent of Total</u>
Noncaptive computer services						
• Remote computing	\$ 56.6	49%	\$ 34.0	41%	\$ 21.4	39%
• EFT processing	15.6	13	13.5	16	8.6	26
• Software products	<u>6.6</u>	<u>6</u>	<u>4.6</u>	<u>6</u>	<u>3.2</u>	<u>6</u>
Subtotal	\$ 78.8	68%	\$ 52.1	63%	\$ 33.2	61%
Captive computer services (a)	\$ 26.8	23%	\$ 21.3	26%	\$ 18.8	34%
Hardware sales (b)	\$ 9.5	8%	\$ 6.2	7%	\$ 2.8	5%
Miscellaneous	\$ <u>1.4</u>	<u>1%</u>	\$ <u>3.7</u>	<u>4%</u>	<u>-</u>	<u>-</u>
Total revenue	\$ 116.5	100%	\$ 83.3	100%	\$ 54.8	100%

(a) Includes processing services provided through the Corporate Services Division to MCorp member banks.

(b) Includes sales and maintenance of terminals, CRTs, ATMs, and IBM micro-computers.

- The majority of MTech's remote computing services was derived from interactive processing services provided to over 600 commercial banks and 150 thrifts located in 11 U.S. states.

- MTech currently processes eight million accounts and more than 120 million items monthly.

- Applications available include the following:

- Management Information and Financial Control.

- Financial Accounting: General ledger; automatic entries from P.O.D. (Proof of Deposit) and MPACT; cost center/profit center reporting; and budget variance.

- Customer Information File (CIF): Customer account integration; suggested rate; cross sell marketing information; online alpha inquiry/name and address.

- Audit Controls: audit confirmations and reporting; regulatory examination reports.
- . Commercial and Personal Loan System.
 - Personal: Add-on interest installments; credit life; automatic coupon book ordering; officer performance reporting; delinquency reporting; credit bureau interface; single interest insurance; variable rate loans; indirect liability accounting; automatic drafts from deposit accounts; post payments online.
 - Personal Lending System: Simple interest installments; multiple rebate methods; multiple insurance options; irregular payment schedule; transaction backdating.
 - Commercial: Rate ceilings and floors; variable rate loans; multiple prime rate parameters; indirect liability accounting; post payments online.
 - Commercial Lending System: Commitment accounting; participant accounting; officer performance reporting; revolving credit lines; transaction backdating.
- . Deposit System.
 - NOW accounts.
 - Super NOW accounts.
 - Money Market accounts.
 - Tiered rates.
 - Variable interest.
 - Online transactions.
 - Combined statements.
 - Descriptive statements with disclosure compliance.
 - Bulk filing.
 - Corporate cash management, including balance reporting, "paid item" account reconciliation, concentration (zero balance) accounts, and account analysis.
 - Kiting suspect reports.
 - Balance fluctuation reporting.
 - Automatic drafts.
 - Customized service charge routines.
 - Certificate of deposit accounting.
 - Savings accounting.
 - IRA tracking.
 - Online teller machines.
 - Signature online.
 - Proof deposit system.

- Daily exception item pull.
- Float capture and analysis, including deposit item counts and multiple transit distribution.
- MTech derived approximately \$6 million in 1984 from utility processing services provided by the Commercial Services Division.
 - Approximately 35 clients in the oil and gas industries, government agencies, and financial institutions, access the division's data center in Dallas.
 - The data center operates IBM computers, running under DOS and MVS.
- MTech developed and operates MPACT, one of the nation's largest shared ATM networks for electronic funds transfer.
 - During 1984 850 MPACT ATMs handled over 60 million transactions. Over two million MPACT cards have been issued to customers in Texas, Oklahoma, and New Mexico. There are currently 500 participating financial institutions and over 930 ATMs installed.
 - In early 1985 the MPACT network was expanded beyond the Southwest with a proprietary network involving 14 ATMs in West Virginia converting to MPACT. MTech also has agreements with two other banks involving a total of four ATMs.
 - During 1985 MTech plans to install an additional 150 MPACT ATMs in supermarkets, shopping malls, airports, and other convenience locations in addition to locations at financial institutions.
 - MPACT features include the following:
 - The MPACT Operations Maintenance System (MOMS) monitors every ATM in the MPACT network 24 hours a day and instantly reports any changes in their operational status.
 - Management information systems produce operational profile reports for each ATM identifying transaction volumes, user mix, peak usage times, and unactivated account information.
 - Nationwide interchange capabilities permit MPACT customers to use their cards in American Express Travelers Cheque machines and American Express green and gold cardholders can use their card in any MPACT machine.
 - During 1983 MTech entered into arrangements with a number of banks to form CIRRRUS, a national ATM network. Under this program 20 million customers from 14 banking organizations covering 37 states and Canada have access to over 8,000 ATMs.

- Switch capabilities allow MPACT to share with other ATM programs, such as Pulse and MoneyMaker in Texas, Exchequer in Oklahoma, and ExpressNet in Arkansas. As a result, MPACT cardholders have access to an additional 1,700 ATMs. MTech also has agreements with regional MasterCard and VISA processors that allow those customers to use their cards in MPACT machines for cash advances.
- MPACT can interface with MTech's MIS service or operate independently.
- MTech also provides consulting and installation services to MPACT clients as well as ATM network management.
- In 1984 MTech introduced its MPACT Express point of sale (POS) program in Texas.
 - MTech has agreements with over 80 retailers that have contracted to install over 400 POS terminals that will accept an MPACT debit card for payment of goods and services.
 - Participating merchants range from local, one-store operators to large chain retailers and include Mobil Oil, AAMCO Transmissions, Pacific Stereo, Centennial Liquor, Southwest Airlines, Tom Thumb Supermarkets, as well as clothing stores, entertainment ticket offices, and shoe stores.
- Approximately \$5 million of MTech's 1984 revenue was derived from EFT software product sales. These products, acquired from Information Processing Corporation in April 1983, include the following:
 - The Universal ATM System provides online control and processing of transactions from the ATMs of major vendors, including IBM, Diebold, NCR, and Docutel.
 - The system runs on IBM 370, 30XX, and 43XX computers under OS and DOS and on Tandem computers.
 - Transactions can be posted in a real time or memo post mode.
 - Options are defined through multibank System Control Records, allowing for different capabilities between owning institutions and using institutions via interchange.
 - Switching to major debit card authorization networks is also supported. Other features include settlement reporting, store and forward, and a "after hours" processing.
 - There are currently over 80 Universal ATM Systems installed.

- Tandem EFT Super Switch (TESS) allows a financial institution to provide EFT switching between itself and other financial institutions as well as providing an interface to any national EFT switch network of which it may be a member.
 - TESS runs on Tandem NonStop computers. Reporting is processed by an IBM host computer.
 - There are currently 20 systems installed.
- The Universal Point of Sale System provides for the support of credit, debit, and travel and entertainment transactions, as well as support for check guarantee services, preapproval processing, and check verification.
 - The system runs on Tandem NonStop computers.
 - There are currently nine Universal Point of Sale Systems installed.
- The Plastic Card Control System provides for the online issuance, maintenance, and inquiry functions to control a debit card customer base.
 - The system runs on IBM 370, 30XX, 43XX, and Tandem NonStop computers.
 - There are currently 57 systems installed.
- The "Only One" Credit Card System provides credit card processing. The system runs on IBM 370, 30XX, and 43XX computers.
- Approximately \$1.6 million of MTech's 1984 revenue was derived from MTech Micro Services' microcomputer software sales to the banking and finance industry.
 - The target market for these products includes MTech's existing processing clients.
 - The software runs on IBM PC, PC-XT, and PC-AT microcomputers.
 - Applications available include the following:
 - Asset/Liability Management.
 - General ledger.
 - Planning and control.
 - Loan Pricing--Customer Profitability.
 - Financial Statement Analysis.
 - Financial Statement Tickler.
 - Inventory.

- . Personnel.
 - . Safe Deposit.
 - . Real Estate Documentation Tickler.
 - . Dow Jones Portfolio Management.
 - . Trust Accounting.
 - . Office Call Tracking.
 - . Stockholder Accounting.
 - . Board Reports.
 - . Graphics.
 - . Spreadsheets.
 - . Word Processing--Mailing List Maintenance.
 - . Personnel Management.
 - . Accounts Payable.
 - . Lockbox Recordkeeping.
 - . Letter of Credit Accounting.
- MTech is currently developing networking capabilities via its MIS-ON-A-MICRO product. The software will permit downloading of information from the MTech mainframe to a microcomputer in the client bank, or uploading of information from the bank's microcomputer to the MTech mainframe. The product is currently being pilot tested. General availability is scheduled for the summer of 1985. The four modules of MIS-ON-A-MICRO include the following:
- . Financial Management allows the preparation of daily financial data and comparisons with yesterday's figures and tomorrow's projections.
 - . Customer Profitability defines bank-customer relationships from a total profitability standpoint. A monitoring device defines what the bank wants as customer yield, and a report is prepared analyzing how to bring up that yield or profitability to desired levels.
 - . Funds Monitoring provides asset/liability management and assists in determining the costs of funds.
 - . Office Performance Management uses certain data relating to customer profitability and places it into a framework of what each bank offering contributes to the financial institution's overall performance.

INDUSTRY MARKETS

- The majority of MTech's 1984 noncaptive computer services revenue was derived from the banking and finance industry. MTech also provides services to retailers through client banks, to the oil and gas industry, and to government agencies.

GEOGRAPHIC MARKETS

- Over 99% of MTEch's noncaptive computer services was derived from the U.S. Less than 1% of revenue was derived from software sales outside the U.S. Approximately 90% of revenue was derived from the Southwest.
- MTEch has 36 data centers, subsidiaries, and sales offices in 11 states: Texas, Oklahoma, Louisiana, Arkansas, Virginia, West Virginia, Massachusetts, New York, Colorado, California, and Georgia. The company has plans to expand its operations in Colorado, Arizona, Kansas, and throughout the New England and Mid-Atlantic states.

COMPUTER HARDWARE AND SOFTWARE

- MTEch currently operates data centers in the following U.S. cities:
 - Abilene (TX).
 - Alexandria (VA).
 - Austin (TX).
 - Bluefield (WV).
 - Boston (MA).
 - Clarksburg (WV).
 - Corpus Christi (TX).
 - Dallas (TX)
 - Fort Smith (AK).
 - Fort Worth (TX).
 - Golden (CO).
 - Houston (TX).
 - Jacksonville (TX).
 - Lubbock (TX).
 - McAllen (TX).
 - New York City (NY).
 - Oklahoma City (OK).
 - San Antonio (TX).
 - Sherman (TX).
 - Shreveport (LA).
 - Texarkana (TX).
 - Tyler (TX).
 - Tulsa (OK).
 - Victoria (TX).
 - Waco (TX).
 - Wichita Falls (TX).
- MTEch has computers from various manufacturers installed at its data centers. The Dallas data center has primarily IBM equipment.
- Bank and thrift processing clients access MTEch data centers via leased lines. Distributed processing via microcomputers is currently available to clients by direct dial, with plans for leased line access by the end of 1985. Ultimately, microcomputer users will be able to access MTEch's data center via a proprietary network currently being developed by MTEch.



**THE MACNEAL-SCHWENDLER
CORPORATION**

815 Colorado Boulevard
Los Angeles, CA 90041
Phone: (213) 258-9111
Fax: (213) 259-3838

Chairman &
CEO: Dr. Richard H. MacNeal
Status: Public Corporation
Stock Exchange: AMEX
Total Employees: 306
Total Revenue: \$65,474,000
Fiscal Year End: 1/31/93

Key Points

- MSC/NASTRAN[®], MacNeal-Schwendler Corporation's (MSC's) principal product, is the world's leading finite element analysis product and is used by engineers and designers worldwide to analyze the stress, vibration, and heat transfer characteristics of structures and mechanical components.
- To protect its traditional analyst market, MSC is working towards decreasing its project life cycle to allow for more flexible planning and to provide faster deliveries for urgently requested capabilities.
- During fiscal 1993, MSC started to use resellers to introduce its products to smaller companies and the company began to explore alternative sales channels throughout the world.
- Marketing and customer support organizations have been expanded worldwide. A direct sales office was opened in Paris and the customer support staff in Tokyo was doubled.
- MSC is providing pricing flexibility to its customers by offering some products on a paid-up license basis.
- MSC suspended development of its MSC/XL finite element modeling package but will work with Aries Technology to offer enhanced products based on Aries ConceptStation. An agreement formed with Aries in fiscal 1993 provides MSC with access to geometric modeling and automatic meshing capabilities that could be marketed to MSC's existing client base and may enable MSC to enter a new market--design engineering--for MSC/NASTRAN and its MSC/EMAS simulation product.

Company Description

MSC develops, markets, and supports computer-aided engineering (CAE) software products used by engineers and designers in industry, research laboratories, and universities. The company's principal product, MSC/NASTRAN, has been adapted to run on supercomputers, mainframes, minicomputers, and workstations.

Company History

MSC was incorporated in California in 1963 as an engineering professional services company. Beginning in 1966, MSC was a major contributor to the development of NASA's NASTRAN, a general-purpose structural analysis computer program based on the finite element method.

In 1971 MSC began offering its own proprietary enhanced version of NASTRAN under the name MSC/NASTRAN.

MSC made its initial public offering of common stock in May 1983. The stock was traded on the over-the-counter market until 1984 when it began trading on the American Exchange.

During late 1991, due to declining revenues and profits resulting from the recession in the U.S., and more particularly from the decline in U.S. defense spending, MSC began a restructuring that resulted in total charges against income of \$15.1 million and included the following actions:

- In order to bring operating expenses back in line with current market conditions, MSC announced a 16% reduction in its worldwide work force, resulting in the elimination of 42 professional and clerical positions worldwide.
- MSC management undertook a thorough review of the company's marketing strategies and possible redirection of its product development plans.
- As a result of this review, product development was discontinued for MSC/PROBE and the St. Louis office was closed. Staff was reduced by 50% at the Milwaukee office where the company's electromagnetic field product (MSC/EMASTTM) is developed. Staff was reduced at the Netherlands office where MSC/DYTRANTM is developed. Taken together, these products contributed only 6% to revenues but a much larger percentage of costs.
- Middle management staff was reduced at Los Angeles headquarters and a Product Planning and Support Department was created to integrate documentation, training, and product support activities.

Strategy

MSC's business strategy emphasizes cost control and greater attention to its largest customer accounts. In order to protect its traditional analyst market, MSC is improving the performance of MSC/NASTRAN's performance for large problems and plans to release MSC/NASTRAN more frequently.

Recognizing the speed with which changes are occurring in the industry, MSC is dedicated to achieving greater ease of use in its products and better integration with other mechanical design tools.

For its electromagnetics and energetic fluid-structure interaction products, MSC's strategy is to pursue market growth with limited resources.

As a result of its new Aries agreement, which provides MSC with state-of-the-art geometric modeling and automatic meshing capabilities, MSC now has the resources to enter a new market--design engineering--for MSC/NASTRAN and MSC/EMAS.

Financials

MSC's fiscal 1993 revenue reached \$65.5 million, a 17% increase over fiscal 1992 revenue of \$55.8 million. Net income was \$12.2 million in fiscal 1993, compared to net losses of \$1.5 million for fiscal 1992, which include the restructuring charges described above.

A five-year financial summary is shown on the following page.

The increase in total revenue during fiscal 1993 was attributed to increased usage of MSC/NASTRAN throughout the world.

- During fiscal 1993, there was a net addition of 91 new MSC/NASTRAN commercial installations, compared to 60 in fiscal 1992, 112 in fiscal 1991, 130 in fiscal 1990, and 115 in fiscal 1989.
- Revenue from international markets was \$35.1 million, or 54% of total revenue, a 13% increase over \$31.0 million for fiscal 1992.

The restructuring announced in October 1991 has had an important effect on cost containment, with earnings having increased more rapidly than revenues. Income from operations before capitalized software costs increased 59% over fiscal 1992.

Research and development expenditures were approximately \$13.4 million (20% of revenue) in fiscal 1993, \$12.5 million (22% of revenue) in fiscal 1992, and \$10.5 million (19% of revenue) in fiscal 1991.

**THE MACNEAL-SCHWENDLER CORPORATION
FIVE-YEAR FINANCIAL SUMMARY
(\$ millions, except per share data)**

ITEM	FISCAL YEAR				
	1/93	1/92	1/91	1/90	1/89
Revenue	\$65.5	\$55.8	\$56.6	\$45.0	\$39.9
• Percent change from previous year	17%	(1%)	26%	13%	15%
Income (loss) before taxes	\$18.7	\$(0.7)	\$17.0	\$14.9	\$13.6
• Percent change from previous year	*	(a)	14%	10%	(10%)
• Gross margin	29%	--	30%	33%	34%
Net income (loss)	\$12.2	\$(1.5)	\$11.2	\$9.8	\$8.9
• Percent change from previous year	913%	(113%)	14%	11%	(2%)
• Net margin	19%	--	20%	22%	22%
Earnings (loss) per share	\$1.03	\$(0.12)	\$0.94	\$0.82	\$0.73
• Percent change from previous year	958%	(113%)	15%	12%	(1%)

* Percent change exceeds 1,000%.

(a) Includes restructuring charges of \$15.1 million.

Alliances

In July 1992, MSC entered into a strategic partnership agreement with Aries Technology, Inc. of Lowell (MA) to sell each others products and to jointly enhance Aries' ConceptStation product line to support MSC's products.

- ConceptStation, which services the design engineer market, uses the latest solid modeling technology to create and display mechanical designs and automatically generates input data required for analysis.
- MSC had suspended development of its finite element modeling package, MSC/XL, because it was not up to industry standards. The agreement with Aries calls for both vendors to upgrade ConceptStation so that it will have all of the functions planned for MSC/XL.
- The Aries' products, which MSC markets under the name MSC/XLplus, provide immediate access for MSC's products to the design engineer market and provide an alternative for its traditional

analyst customers who have largely relied on third-party software for pre- and post-processing of MSC/NASTRAN data.

Employees

As of January 31, 1993, MSC had 306 employees (generating \$213,967 per employee), segmented as follows:

FUNCTION	NUMBER	PERCENT OF TOTAL
Marketing	95	31%
Technical	131	43%
Administration	80	26%
TOTAL	306	100%

Competitors

MSC's major competitor is Swanson Analysis Systems, Inc. (ANSYS product).

Key Products and Services

Approximately 88% of MSC's revenue is derived from rents and royalties for MSC/NASTRAN and related software products. The remainder of revenue is derived from education and training and consulting services. A total of 88% of fiscal 1993 revenue was derived from MSC/NASTRAN.

A five-year summary of MSC/NASTRAN installation activity follows:

MSC/NASTRAN INSTALLATIONS

ITEM	FISCAL YEAR				
	1/93	1/92	1/91	1/90	1/89
Number of installations at start of year	1,159	1,099	987	857	742
Net additions (a)	91	60	112	130	115
Number of installations at year end (b)	1,250	1,159	1,099	987	857

- (a) New installations less cancellations due to termination or reassignment.
- (b) Does not include a total of 290 universities for fiscal 1993, 268 for fiscal 1992, 254 for fiscal 1991, 224 for fiscal 1990, and 173 for fiscal 1989.

MSC's major product offerings include MSC/NASTRAN, MSC/EMAS, MSC DYTRAN, and MSC/XLplus.

MSC/NASTRAN is based on finite element analysis and is used as a CAE tool to analyze structures to determine their strength, safety, and performance characteristics. Additional types of structural analysis provided by the program include analyses of vibration characteristics, dynamic response, transient heat transfer, elastic stability, and aeroelastic response.

- MSC/NASTRAN is used in the aerospace industry to determine stress distribution in major aircraft parts. The same principles have been used in the design of jets, rockets, engines, automobiles, trucks, tires, ships, farm equipment, heavy industrial equipment, nuclear containment vessels, helicopters, and spacecraft.
- MSC/NASTRAN runs on a range of supercomputers, mainframes, minicomputers, and workstations manufactured by IBM, Control Data Systems, DEC, Convex, Fujitsu, Hewlett-Packard, Hitachi, Nippon Electric, Siemens, Silicon Graphics, Sun Microsystems, and Cray Research.
- MSC has a policy of leasing rather than selling its software products, including MSC/NASTRAN. The standard lease agreement is for a minimum of one year and is thereafter cancellable after six months notice. It specifies monthly payments and additional payments based on usage for larger computers and royalties as a percent of sales for data center network customers.

MSC/EMAS allows engineers to simulate and analyze electromagnetic fields in motors, generators, solenoids, wave guides, antennas, and microwave circuitry.

MSC/DYTRAN, released in the fall of 1991, analyzes transient, dynamic events characterized by large structural distortions or the interaction of fluids with structures. Engineers can use MSC/DYTRAN to solve practical problems including automotive crash simulation, vehicle occupant safety studies, and aircraft crashworthiness.

MSC/XLplus, the first joint product resulting from the development and marketing agreement with Aries Technology, is an interactive interface to MSC/NASTRAN, MSC/EMAS, and MSC/DYTRAN that combines solid modeling-based geometry creation, parametric editing, and automated meshing tools.

MSC continues to market MSC/PROBE, an analysis program based on p-version finite element analysis for detailed stress calculations,

although further development on the product has been discontinued. The company is in the process of merging this technology into the primary products listed above.

Industry Markets

Approximately 89% of MSC's fiscal 1993 revenue was derived from industrial/manufacturing companies involved in the aerospace, automotive, shipbuilding, industrial and office equipment, nuclear, petrochemical, optic, architectural, and engineering industries. Approximately 4% of fiscal 1993 revenue was derived from data center network services vendors, 5% from government agencies, and 2% from universities.

Geographic Markets

Approximately 46% of MSC's fiscal 1993 revenue was derived from the U.S., 29% from Europe, 22% from the Far East, and the remainder from Canada, South America, and Australia. A three-year summary of geographic source of revenue follows:

**THE MACNEAL-SCHWENDLER CORPORATION
THREE-YEAR GEOGRAPHIC SOURCE OF REVENUE SUMMARY
(\$ millions)**

SOURCE	FISCAL YEAR					
	1/93		1/92		1/91	
	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
U.S.	\$30.4	46%	\$24.8	44%	\$28.7	51%
Export sales (a)	16.4	25%	14.3	26%	12.8	23%
Europe	18.7	29%	16.7	30%	15.1	26%
TOTAL	\$65.5	100%	\$55.8	100%	\$56.6	100%

(a) Consists primarily of Far East revenue, with a minor amount from the rest of the world outside Europe.

U.S. regional offices are located as follows:

Western Region: Los Angeles (CA)
 Southwest Region: Dallas/Ft. Worth
 Midwest Region: Milwaukee (WI)
 Eastern Region: Lake Ronkonkoma (NY)

Additional U.S. offices are located in Atlanta (GA), Livonia (MI), Mount Laurel (NJ), and Seattle (WA).

MSC's European headquarters, located in Munich, manages wholly owned subsidiaries in the U.K., Italy, France, and the Netherlands.

Far East headquarters are in Tokyo. Sales and service are handled through a wholly owned subsidiary in Hong Kong, and a 90% owned subsidiary based in Tokyo.

During fiscal 1993, a sales office was opened in Moscow.

The company also has representatives in several European and Far East countries, as well as in India, Australia, and Latin America.

COMPANY PROFILE

THE MACNEAL-SCHWENDLER CORPORATION

815 Colorado Boulevard
Los Angeles, CA 90041
Phone: (213) 258-9111
Fax (213) 259-3838

Dr. Richard H. MacNeal, Chairman and CEO
Public Corporation, AMEX
Total Employees: 280
Total Revenue, Fiscal Year End
1/31/92: \$55,826,000

The Company

The MacNeal-Schwendler Corporation (MSC) develops, markets, and supports computer-aided engineering (CAE) software products used by engineers and designers in industry, research laboratories, and universities. The company's principal product, MSC/NASTRAN[®], has been adapted to run on supercomputers, mainframes, minicomputers, and workstations.

- MSC was incorporated in California in 1963 as an engineering professional services company. Beginning in 1966, MSC was a major contributor to the development of NASA's NASTRAN, a general-purpose structural analysis computer program based on the finite element method.
- In 1971 MSC began offering its own proprietary enhanced version of NASTRAN under the name MSC/NASTRAN.
- MSC made its initial public offering of common stock in May 1983. The stock was traded on the over-the-counter market until 1984 when it began trading on the American Exchange.

During late 1991, due to declining revenues and profits resulting from the recession in the U.S., and more particularly from the decline in U.S. defense spending, MSC began a restructuring that resulted in total charges against income of \$15.1 million and included the following actions:

- In order to bring operating expenses back in line with current market conditions, MSC announced a 16% reduction in its worldwide work force, resulting in the elimination of 42 professional and clerical positions worldwide. Costs associated with this action, including severance and other related costs, amounted to approximately \$3.6 million.

- MSC management undertook a thorough review of the company's marketing strategies and possible redirection of its product development plans.
- As a result of this review, product development was discontinued for MSC/PROBE and the St. Louis office was closed. Staff was reduced by 50% at the Milwaukee office where the company's electromagnetic field product (MSC/EMASTTM) is developed. Staff was reduced at the Netherlands office where MSC/DYTRANTM is developed. Taken together, these products contributed only 6% to revenues but a much larger percentage of costs.
- Future development and marketing will focus on MSC/NASTRAN, MSC/EMAS, MSC/DYTRAN, and MSC/XLR.
- Middle management staff was reduced at Los Angeles headquarters and a Product Planning and Support Department was created to integrate documentation, training, and product support activities.

MSC's fiscal 1992 revenue was \$55.8 million, a 1% decrease from fiscal 1991 revenue of \$56.6 million. Net losses of \$1.5 million for fiscal 1992 include the restructuring charges described above. A five-year financial summary follows:

**THE MACNEAL-SCHWENDLER CORPORATION
FIVE-YEAR FINANCIAL SUMMARY
(\$ millions, except per share data)**

ITEM	FISCAL YEAR				
	1/92	1/91	1/90	1/89	1/88
Revenue	\$55.8	\$56.6	\$45.0	\$39.9	\$34.
• Percent increase (decrease) from previous year	(1%)	26%	13%	15%	28%
Income (loss) before taxes	\$(0.7)	\$17.0	\$14.9	\$13.6	\$15.1
• Percent increase (decrease) from previous year	*	14%	10%	(10%)	19%
• Gross margin	--	30%	33%	34%	44%
Net income (loss)	\$(1.5)	\$11.2	\$9.8	\$8.9	\$9.1
• Percent increase (decrease) from previous year	(113%)	14%	11%	(2%)	29%
• Net margin	--	20%	22%	22%	26%
Earnings (loss) per share	\$(0.12)	\$0.94	\$0.82	\$0.73	\$0.74
• Percent increase (decrease) from previous year	(113%)	15%	12%	(1%)	28%

* Percent change exceeds 1,000%.

- (a) Includes \$1.2 million in other income from the sale of MSC's 35% equity interest in Modular Data Systems, Inc. in December 1989.

The slight reduction in revenues during fiscal 1992 was attributed primarily to a decrease in MSC/NASTRAN revenue in North America caused by cutbacks in the aerospace industry, specifically in the area of defense spending. The recession also affected other North American industries resulting in an overall decrease in revenue from the prior year.

- There were a total of 60 new installations of MSC/NASTRAN in fiscal 1992, compared to 112 in fiscal 1991, 130 in fiscal 1990, 115 in fiscal 1989 and 125 in fiscal 1988.

Research and development expenditures were approximately \$12.5 million (22% of revenue) in fiscal 1992, \$10.5 million (19% of revenue) in fiscal 1991, and \$8.6 million (19% of revenue) in fiscal 1990.

Revenue for the three months ending April 30, 1992 was \$14.7 million, slightly higher than the same period in 1991. Net income reached \$3.1 million, compared to \$2.9 million for the same period a year ago.

As of January 31, 1992, MSC had 280 employees (generating \$199,378 per employee), segmented as follows:

FUNCTION	NUMBER	PERCENT OF TOTAL
Marketing	73	26%
Technical	124	44%
Administration	83	30%
TOTAL	280	100%

MSC's major competitor is Swanson Analysis Systems, Inc. of Houston, PA (ANSYS product).

Key Products and Services

Approximately 90% of MSC's revenue is derived from rents and royalties for MSC/NASTRAN and related software products. The remainder of revenue is derived from education and training and consulting services.

- A total of 87% of fiscal 1992 revenue was derived from MSC/NASTRAN.

A five-year summary of MSC/NASTRAN installation activity follows:

MSC/NASTRAN INSTALLATIONS

ITEM	FISCAL YEAR				
	1/92	1/91	1/90	1/89	1/88
Number of installations at start of year	1,099	987	857	742	617
Net additions (a)	60	112	130	115	125
Number of installations at year end (b)	1,159	1,099	987	857	742

- (a) New installations less cancellations due to termination or reassignment.
- (b) Does not include a total of 268 universities for fiscal 1993, 254 for fiscal 1991, 224 for fiscal 1990, 173 for fiscal 1989, and 146 for fiscal 1988.

MSC's major product offerings include MSC/NASTRAN, MSC/XL, MSC/EMAS, and MSC DYTRAN.

MSC/NASTRAN is based on finite element analysis and is used as a CAE tool to analyze structures to determine their strength, safety, and performance characteristics. Additional types of structural analysis provided by the program include analyses of vibration characteristics, dynamic response, transient heat transfer, elastic stability, and aeroelastic response.

- MSC/NASTRAN is used in the aerospace industry to determine stress distribution in major aircraft parts. The same principles have been used in the design of jets, rockets, engines, automobiles, trucks, tires, ships, farm equipment, heavy industrial equipment, nuclear containment vessels, helicopters, and spacecraft.
- MSC/NASTRAN runs on a range of supercomputers, mainframes, minicomputers, and workstations manufactured by IBM, Control Data, DEC, Convex, Fujitsu, Hewlett-Packard, Hitachi, Nippon Electric, Siemens, Silicon Graphics, Sun Microsystems, and Cray Research.
- MSC has a policy of leasing rather than selling its software products, including MSC/NASTRAN. The standard lease agreement is for a minimum of one year and is thereafter cancellable after six months notice. It specifies monthly payments and additional payments based on usage for larger computers and royalties as a percent of sales for data center network customers.

MSC/EMAS allows engineers to simulate and analyze electromagnetic fields in motors, generators, solenoids, wave guides, antennas, and microwave circuitry.

MSC/DYTRAN, released in the fall of 1991, analyzes transient, dynamic events characterized by large structural distortions or the interaction of fluids with structures. Engineers can use MSC/DYTRAN to solve practical problems including automotive crash simulation, vehicle occupant safety studies, and aircraft crashworthiness.

MSC/XL is a graphics modeling and results interpretation tool that provides interactive preprocessing and postprocessing support to MSC/NASTRAN and MSC/EMAS. Engineers use the product to construct three-dimensional finite element models, simulate their

real-world characteristics, and analyze them using MSC/NASTRAN or MSC EMAS without ever leaving the program.

MSC continues to market MSC/PROBE, an analysis program based on p-version finite element analysis for detailed stress calculations, although further development on the product has been discontinued. The company is in the process of merging this technology into the primary products listed above.

Industry Markets

Approximately 90% of MSC's fiscal 1992 revenue was derived from industrial/manufacturing companies involved in the aerospace, automotive, shipbuilding, industrial and office equipment, nuclear, petrochemical, optic, architectural, and engineering industries. Approximately 2% of fiscal 1992 revenue was derived from data center network services vendors, 6% from government agencies, and 2% from universities.

Geographic Markets

Approximately 44% of MSC's fiscal 1992 revenue was derived from North America, 30% from Europe, and 26% from other international sources. A three-year summary of geographic source of revenue follows:

THE MACNEAL-SCHWENDLER CORPORATION
THREE-YEAR GEOGRAPHIC SOURCE OF REVENUE SUMMARY
(\$ millions)

	FISCAL YEAR					
	1/92		1/91		1/90	
SOURCE	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
North America	\$24.8	44%	\$28.7	51%	\$25.0	56%
Export sales (a)	14.3	26%	12.8	23%	10.2	22%
Western Europe	16.7	30%	15.1	26%	9.8	22%
TOTAL	\$55.8	100%	\$56.6	100%	\$45.0	100%

(a) Consists primarily of Far East revenue, with a minor amount from the rest of the world outside Europe.

U.S. regional offices are located as follows:

Western Region: Los Angeles (CA)
Southwest Region: Dallas/Ft. Worth
Midwest Region: Milwaukee (WI)
Eastern Region: Lake Ronkonkoma (NY)

Additional U.S. offices are located in Atlanta (GA), Livonia (MI), Mount Laurel (NJ), and Seattle (WA). An engineering services office is in Rockville (MD).

MSC's European headquarters, located in Munich, manages wholly owned subsidiaries in the U.K., Italy, France, and the Netherlands.

Far East headquarters are in Tokyo. Sales and service are handled through a wholly owned subsidiary in Hong Kong, and a 90% owned subsidiary based in Tokyo.

The company also has representatives in several European and Far East countries, as well as in India, Australia, and Latin America.

COMPANY PROFILE

THE MACNEAL-SCHWENDLER CORPORATION

815 Colorado Boulevard
Los Angeles, CA 90041
(213) 258-9111

Dr. Richard H. MacNeal, Chairman
Dr. Joseph F. Gloudeman, President and
CEO
Public Corporation, AMEX
Total Employees: 319
Total Revenue, Fiscal Year End
1/31/91: \$56,611,000

The Company

The MacNeal-Schwendler Corporation (MSC) develops, markets, and supports computer-aided engineering (CAE) software products used by engineers and designers in industry, research laboratories, and universities. The company's principal product, MSC/NASTRAN^R, has been adapted to run on supercomputers, mainframes, minicomputers, and workstations.

- MSC was incorporated in California in 1963 as an engineering professional services company. Beginning in 1966, MSC was a major contributor to the development of NASA's NASTRAN, a general purpose structural analysis computer program based on the finite element method.
- In 1971 MSC began offering its own proprietary enhanced version of NASTRAN under the name MSC/NASTRAN.
- MSC made its initial public offering of common stock in May 1983. The stock was traded on the over-the-counter market until 1984 when it began trading on the American Exchange.

MSC's fiscal 1991 revenue reached \$56.6 million, a 26% increase over fiscal 1990 revenue of \$45.0 million. Net income rose 14%, from \$9.8 million in fiscal 1990 to \$11.2 million in fiscal 1991. A five-year financial summary follows:

THE MACNEAL-SCHWENDLER CORPORATION
FIVE-YEAR FINANCIAL SUMMARY
(\$ millions, except per share data)

ITEM	FISCAL YEAR					
	1/91	1/90	1/89	1/88	1/87	CAGR
Revenue	\$56.6	\$45.0	\$39.9	\$34.5	\$27.1	20%
• Percent increase from previous year	26%	13%	15%	28%	28%	
Income before taxes	\$17.0	\$14.9	\$13.6	\$15.1	\$12.7	8%
• Percent increase (decrease) from previous year	14%	10% (a)	(10%)	19%	51%	
• Gross margin	30%	33%	34%	44%	47%	
Net income	\$11.2	\$9.8	\$8.9	\$9.1	\$7.0	12%
• Percent increase (decrease) from previous year	14%	11%	(2%)	29%	44%	
• Net margin	20%	22%	22%	26%	26%	
Earnings per share	\$0.94	\$0.82	\$0.73	\$0.74	\$0.58	13%
• Percent increase (decrease) from previous year	15%	12%	(1%)	28%	45%	

(a) Includes \$1.2 million in other income from the sale of MSC's 35% equity interest in Modular Data Systems, Inc. in December 1989.

MSC management attributes the company's revenue growth in fiscal 1991 primarily to additional commercial installations and increased use of MSC/NASTRAN. The increase was also due to increased revenues of \$576,000 for MSC/PROBE and nearly \$1.4 million for MSC/PIECES, two products acquired in late 1989.

- There were a total of 112 net new installations of MSC/NASTRAN in fiscal 1991, compared to 130 in fiscal 1990, 115 in fiscal 1989 and 125 in fiscal 1988.

Research and development expenditures were approximately \$10.5 million (19% of revenue) in fiscal 1991, \$8.6 million (19% of revenue) in fiscal 1990, \$7.0 million (18% of revenue) in fiscal 1989, and \$5.4 million (16% of revenue) in fiscal 1988.

Revenue for the three months ending April 30, 1991 reached \$14.7 million, a 15% increase over \$12.8 million for the same period in

1990. Net income for the period rose 11%, from \$2.6 million to \$2.9 million.

As of January 31, 1991, MSC had 319 employees (generating \$177,464 per employee), segmented as follows:

FUNCTION	NUMBER	PERCENT OF TOTAL
Marketing	72	22%
Technical	152	48%
Administration	95	30%
TOTAL	319	100%

MSC's major competitor is Swanson Analysis Systems, Inc. of Houston, PA (ANSYS product).

Key Products and Services

Over 90% of MSC's revenue is derived from rents and royalties for MSC/NASTRAN and related software products. The remainder of revenue was derived from education and training and consulting services.

A five-year summary of MSC/NASTRAN installation activity follows:

MSC/NASTRAN INSTALLATIONS

ITEM	FISCAL YEAR				
	1/91	1/90	1/89	1/88	1/87
Number of installations at start of year	987	857	742	617	501
Net additions (a)	112	130	115	125	116
Number of installations at year end (b)	1,099	987	857	742	617

- (a) *New installations less cancellations due to termination or reassignment.*
- (b) *Does not include a total of 254 universities for fiscal 1991, 224 for fiscal 1990, 173 for fiscal 1989, 146 for fiscal 1988, and 109 for fiscal 1987.*

MSC/NASTRAN is based on finite element analysis and is used as a CAE tool to analyze structures to determine their strength, safety, and performance characteristics. Additional types of structural analysis provided by the program include analyses of vibration characteristics, dynamic response, transient heat transfer, elastic stability, and aeroelastic response.

- MSC/NASTRAN is used in the aerospace industry to determine stress distribution in major aircraft parts. The same principles have been used in the design of jets, rockets, engines, automobiles, trucks, tires, ships, farm equipment, heavy industrial equipment, nuclear containment vessels, helicopters, and spacecraft.
- MSC/NASTRAN runs on over 45 hardware platforms, including a range of supercomputers, mainframes, minicomputers, and workstations manufactured by IBM, Control Data, Unisys, FPS, DEC, Amdahl, Convex, Alliant, Hewlett-Packard, Data General, Prime, Fujitsu, National Advanced Systems, Siemens, Hitachi, Sun Microsystems, and Cray Research.
- MSC has a policy of leasing rather than selling its software products, including MSC/NASTRAN. The standard lease agreement is for a minimum of one year and is thereafter cancellable after six months notice. It specifies monthly payments and additional payments based on usage for larger computers and royalties as a percent of sales for data center network customers.
 - The monthly minimum payment for agreements to use MSC/NASTRAN for U.S. industrial customers and government agencies is based on the size and speed of the computer and ranges from \$800 on some workstations to \$4,000 on supercomputers.
 - The royalty paid by data center network clients is currently equal to 30% of their billings to customers for MSC/NASTRAN usage.
 - Fees charged to universities are substantially lower than those charged to other customers when MSC/NASTRAN is used exclusively for teaching accredited university courses and for university-funded research.

MSC/NASTRAN-WS, released in October 1989, is an integrated analysis system designed for engineering workstations that links

MSC/XL with a subset of MSC/NASTRAN for stress and vibration analysis.

MSC/XL is a graphics modeling and results interpretation tool that provides interactive preprocessing and postprocessing support to MSC/NASTRAN and MSC/EMAS, MSC's electromagnetic analysis tool. Future versions of MSC/XL will be integrated with MCS/DYTRAN and MSC/PROBE.

MSC/PROBE, acquired with Noetic Technologies in November 1989, is an analysis program based on p-version finite element analysis for detailed stress calculations. The product is used in engineering installations throughout the aerospace, automotive, and manufacturing industries.

MSC/DYTRAN merges into a single offering the nonlinear technologies of two existing MSC products, MSC/DYNA and MSC/PIECES. The product is used to solve highly nonlinear, transient dynamic problems, including those involving high-speed impact, as well as fluid-structure interaction problems.

MSC's microcomputer-based software products include the following:

- MSC/pal 2™ is a three-dimensional finite element product for stress and vibration analysis applications. MSC/pal 2 runs on IBM PCs and compatible personal computers and is priced from \$995 to \$2,495. An Apple Macintosh version of MSC/pal 2 is also available.
- MSC/cal™ is a three-dimensional heat transfer analysis program for IBM PC/XT, PC/AT, and compatible microcomputers. It is priced from \$995 to \$2,295.
- MSC/mod™ is a preprocessor program used to develop finite element models that can then be analyzed using MSC/pal 2, MSC/cal, or MSC/NASTRAN. MSC/mod is priced at \$495. MSC/mod also interfaces to various CAD programs such as Autodesk's AutoCAD.

MSC's Electromagnetic Engineering Applications Department (E/EAD), headquartered in Milwaukee (WI), offers a family of software products and consulting services for electromagnetic analysis. E/EAD's product line includes:

- MSC/EMAS™, released in October 1989, is an electromagnetic analysis system especially suited to the design

of modern high-frequency devices. MSC/EMAS is available for IBM, DEC, Apollo, Convex, and Cray computers.

- MSC/MAGGIE[®], for two-dimensional analysis, runs on IBM PCs and compatibles.

MSC offers several educational tools designed to teach the entry-level user how to use MSC/NASTRAN in structural analysis.

- PRENASTRAN is an introductory interactive computer program available for IBM, DEC VAX, and Apollo computers that is intended for the entry-level user or as a review aid for the occasional user of MSC/NASTRAN.
- MSC also sells a computer laboratory manual that may be used in conjunction with PRENASTRAN or separately.
- The company also offers a series of videotaped lectures that are designed to train users in the capabilities of MSC/NASTRAN.

Industry Markets

Approximately 88% of MSC's fiscal 1991 revenue was derived from industrial/manufacturing companies involved in the aerospace, automotive, shipbuilding, industrial and office equipment, nuclear, petrochemical, optic, architectural, and engineering industries. Approximately 6% of fiscal 1991 revenue was derived from data center network services vendors, 4% from government agencies, and 2% from universities.

Geographic Markets

Approximately 51% of MSC's fiscal 1991 revenue was derived from the U.S., 27% from Europe, and 19% from the Far East. The remaining 3% was derived primarily from Canada, South America, and Australia. A three-year summary of geographic source of revenue follows:

**THE MACNEAL-SCHWENDLER CORPORATION
THREE-YEAR GEOGRAPHIC SOURCE OF REVENUE SUMMARY
(\$ millions)**

SOURCE	FISCAL YEAR					
	1/91		1/90		1/89	
	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
U.S.	\$28.7	51%	\$25.0	56%	\$24.9	62%
Export sales (a)	12.8	23%	10.2	22%	7.4	19%
Western Europe	15.1	26%	9.8	22%	7.6	19%
TOTAL	\$56.6	100%	\$45.0	100%	\$39.9	100%

(a) *Consists primarily of Far East revenue, with a minor amount from the rest of the world outside Europe.*

U.S. regional offices are located as follows:

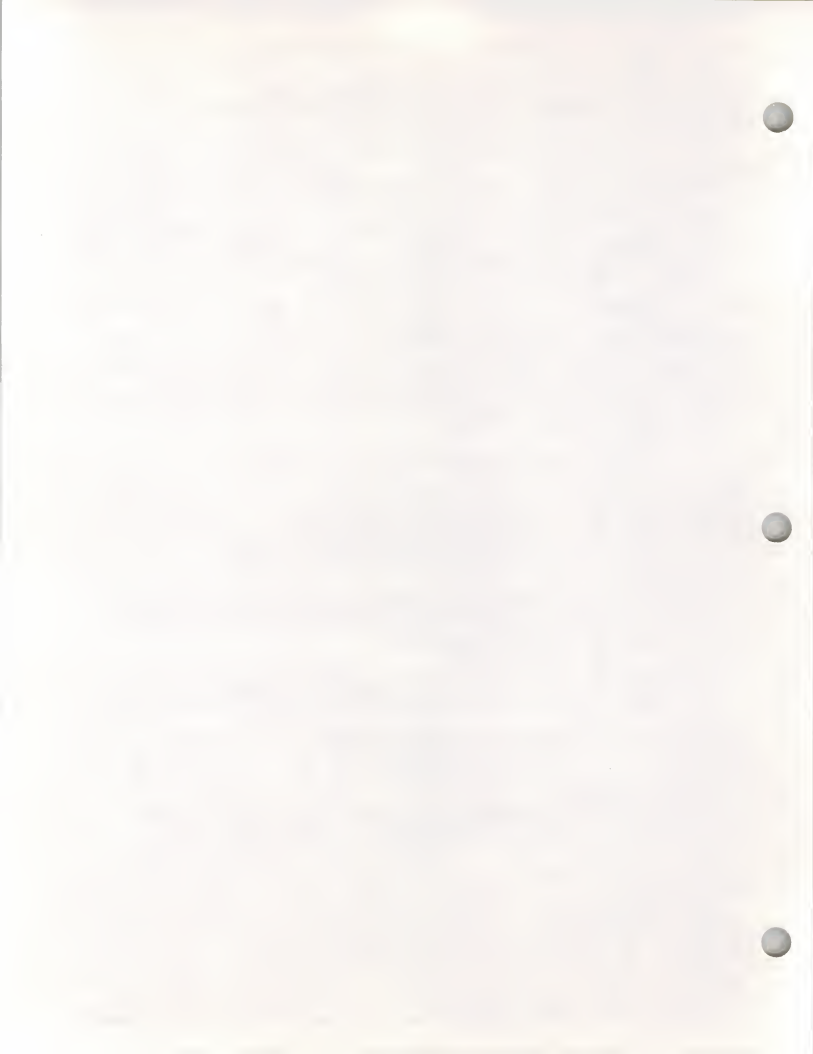
Western Region: Elk Grove (CA)
 Southwest Region: Dallas/Ft. Worth
 Midwest Region: Brookfield (WI)
 Eastern Region: Lake Ronkonkoma (NY)

Additional U.S. offices are located in Atlanta (GA), Los Angeles (CA), Livonia (MI), Mount Laurel (NJ), Milwaukee (WI), and St. Louis (MO). Engineering services offices are located in Livonia (MI) and Rockville (MD).

MSC's European headquarters, located in Munich, manages wholly owned subsidiaries in the U.K., Italy, and the Netherlands.

Far East headquarters are in Tokyo. Sales and service are handled through a wholly owned subsidiary in Hong Kong, and a 90% owned subsidiary based in Tokyo.

The company also has representatives in several European and Far East countries, as well as in India, Australia, and Latin America.



COMPANY PROFILE

THE MACNEAL-SCHWENDLER CORPORATION

815 Colorado Boulevard
Los Angeles, CA 90041
(213) 258-9111

Dr. Richard H. MacNeal, Chairman
Dr. Joseph F. Gloudeman, President and
CEO
Public Corporation, AMEX
Total Employees: 306
Total Revenue, Fiscal Year End
1/31/90: \$45,016,000

The Company

The MacNeal-Schwendler Corporation (MSC) develops, markets, and supports computer-aided engineering (CAE) software products used by engineers and designers in industry, research laboratories, and universities. The company's principal product, MSC/NASTRAN[®], has been adapted to run on supercomputers, mainframes, minicomputers, and workstations.

- MSC was incorporated in California in 1963 as an engineering professional services company. Beginning in 1966, MSC was a major contributor to the development of NASA's NASTRAN, a general purpose structural analysis computer program based on the finite element method.
- In 1971 MSC began offering its own proprietary enhanced version of NASTRAN under the name MSC/NASTRAN.
- MSC made an initial public offering of common stock in May 1983. The stock was traded on the over-the-counter market until 1984 when it began trading on the American Exchange.

MSC's fiscal 1990 revenue reached \$45.0 million, a 13% increase over fiscal 1989 revenue of \$39.9 million. Net income rose 22%, from \$8.9 million in fiscal 1989 to \$9.8 million in fiscal 1990. A five-year financial summary follows:

THE MACNEAL-SCHWENDLER CORPORATION
FIVE-YEAR FINANCIAL SUMMARY
(\$ millions, except per share data)

ITEM	FISCAL YEAR					
	1/90	1/89	1/88	1/87	1/86	CAGR
Revenue	\$45.0	\$39.9	\$34.5	\$27.1	\$21.1	21%
• Percent increase from previous year	13%	15%	28%	28%	38%	
Income before taxes	\$14.9	\$13.6	\$15.1	\$12.7	\$8.4	15%
• Percent increase (decrease) from previous year	10%	(10%)	19%	51%	44%	
• Gross margin	33%	34%	44%	47%	40%	
Net income	\$9.8	\$8.9	\$9.1	\$7.0	\$4.9	19%
• Percent increase (decrease) from previous year	11%	(2%)	29%	44%	44%	
• Net margin	22%	22%	26%	26%	23%	
Earnings per share	\$0.82	\$0.73	\$0.74	\$0.58	\$0.40	20%
• Percent increase (decrease) from previous year	12%	(1%)	28%	45%	48%	

(a) Includes \$1.2 million in other income from the sale of MSC's 35% equity interest in Modular Data Systems, Inc. in December 1989.

MSC management attributes the company's revenue growth in fiscal 1990 primarily to increased use of MSC/NASTRAN. Revenues also include three months of operations for Noetic Technologies, Inc. and two months of operations for PISCES International B.V., two companies acquired in the fourth quarter.

- There were a total of 130 net new installations of MSC/NASTRAN in fiscal 1990, compared to 115 in fiscal 1989 and 125 in fiscal 1988.

Research and development expenditures were approximately \$8.6 million (19% of revenue) in fiscal 1990, \$7.0 million (18% of revenue) in fiscal 1989, and \$5.4 million (16% of revenue) in fiscal 1988.

Acquisitions made by MSC during fiscal 1990 include the following:

- In November 1989, MSC acquired Noetic Technologies, Inc. of St. Louis (MO) for MSC stock, options, and warrants valued at approximately \$2.5 million. Noetic's software product, now called MSC/PROBE™, supports the detailed analysis of component structural parts.
- In October 1989, MSC acquired PISCES International B.V. for \$2 million. PISCES is the developer and distributor of the software product now called MSC/PISCES™, which is used for the analysis of high-speed elastoplastic and hydrodynamic phenomena.

Revenue for the three months ending April 30, 1990 reached \$12.8 million, a 20% increase over \$10.7 million for the same period in 1989. Net income for the period rose 13%, from \$2.3 million to \$2.6 million.

As of January 31, 1990, MSC had 306 employees (generating \$147,111 per employee), segmented as follows:

FUNCTION	NUMBER	PERCENT OF TOTAL
Marketing	76	25%
Technical	132	43%
Administration	98	32%
TOTAL	306	100%

The company currently has 309 employees.

MSC's major competitor is Swanson Analysis Systems, Inc. of Houston, PA (ANSYS product).

Key Products and Services

Over 87% of MSC's revenue is derived from rents and royalties for MSC/NASTRAN and related software products. The remaining 13% of revenue was derived from education and training and consulting services.

- Approximately 89% of revenue was derived from MSC/NASTRAN and 11% from other software products and services.

A five-year summary of MSC/NASTRAN installation activity follows:

MSC/NASTRAN INSTALLATIONS

ITEM	FISCAL YEAR				
	1/90	1/89	1/88	1/87	1/86
Number of installations at start of year	857	742	617	501	386
Net additions (a)	130	115	125	116	115
Number of installations at year end (b)	987	857	742	617	501

(a) New installations less cancellations due to termination or reassignment.

(b) Does not include a total of 224 universities for fiscal 1990, 173 for fiscal 1989, 146 for fiscal 1988, 109 for fiscal 1987, and 91 for fiscal 1986.

MSC/NASTRAN is based on finite element analysis and is used as a CAE tool to analyze structures to determine their strength, safety, and performance characteristics. Additional types of structural analysis provided by the program include analyses of vibration characteristics, dynamic response, transient heat transfer, elastic stability, and aeroelastic response.

- MSC/NASTRAN is used in the aerospace industry to determine stress distribution in major aircraft parts. The same principles have been used in the design of jets, rockets, engines, automobiles, trucks, tires, ships, farm equipment, heavy industrial equipment, nuclear containment vessels, helicopters, and spacecraft.
- MSC/NASTRAN runs on over 40 hardware platforms, including a range of supercomputers, mainframes, minicomputers, and workstations manufactured by IBM, Control Data, Unisys, FPS, Intergraph, DEC, Amdahl, Convex, Silicon Graphics, Alliant, Hewlett-Packard/Apollo, Fujitsu, Siemens, Hitachi, NEC, Stardent, Sun Microsystems, and Cray Research.
- MSC has a policy of leasing rather than selling its software products, including MSC/NASTRAN. The standard lease agreement is for a minimum of one year and is thereafter cancellable after six months notice. It specifies monthly payments and additional payments based on usage for larger computers and royalties as a percent of sales for data center network customers.

- The monthly minimum payment for agreements to use MSC/NASTRAN for U.S. industrial customers and government agencies is based on the size and speed of the computer and ranges from \$800 on some workstations to \$4,000 on supercomputers.
- The royalty paid by data center network clients is currently equal to 30% of their billings to customers for MSC/NASTRAN usage.
- Fees charged to universities are substantially lower than those charged to other customers when MSC/NASTRAN is used exclusively for teaching accredited university courses and for university-funded research.

MSC also markets optional software modules for use with MSC/NASTRAN, including:

- Superelements are used to analyze parts of a structure and then allow an engineer to combine these analyses into a single, large analysis.
- Aeroelastic analysis allows aerodynamicists to analyze models for aeroelastic effects such as wing flutter.
- MSC/ACCESSTM is used by the engineer or designer to build a custom postprocessor to extract MSC/NASTRAN analysis data. The postprocessor can then request detailed information and receive analysis data for immediate interpretation of results.
- MSC/TRANSTM is a companion product to MSC/ACCESS. It allows the transfer of MSC/NASTRAN data from one computer type to another.
- MSC/XL, released in March 1989, is an interactive modeling and results interpretation tool for MSC/NASTRAN and MSC/EMAS, the company's new electromagnetic analysis tool.

MSC/NASTRAN-WS, released in October 1989, is an integrated analysis system designed for engineering workstations that links MSC/XL with a subset of MSC/NASTRAN for stress and vibration analysis.

MSC/DYNATM, released in May 1989, is a finite element analysis tool that supports the simulation and analysis of transient, nonlinear structural responses, including those involving high-speed impact.

As a result of acquisitions made during 1989, MSC also offers the following products:

- MSC/PROBE is an analysis program based on p-version finite element analysis for detailed stress calculations. The product is used in engineering installations throughout the aerospace, automotive, and manufacturing industries.
- MSC/PISCES is a finite element and finite difference program that analyzes extremely high-speed impact and very large strains. The product augments the nonlinear analysis capabilities of MSC/DYNA.

MSC's microcomputer-based software products include the following:

- MSC/pal 2™ is a three-dimensional finite element product for stress and vibration analysis applications. MSC/pal 2 runs on IBM PCs and compatible personal computers and is priced from \$995 to \$2,495. An Apple Macintosh version of MSC/pal 2 is also available.
- MSC/cal™ is a three-dimensional heat transfer analysis program for IBM PC/XT, PC/AT, and compatible microcomputers. It is priced from \$995 to \$2,295.
- MSC/mod™ is a preprocessor program used to develop finite element models that can then be analyzed using MSC/pal 2, MSC/cal, or MSC/NASTRAN. MSC/mod is priced at \$495. MSC/mod also interfaces to various CAD programs such as Autodesk's AutoCAD.

MSC's Electromagnetic Engineering Applications Department (E/EAD), headquartered in Milwaukee (WI), offers a family of software products and consulting services for electromagnetic analysis. E/EAD's product line includes:

- MSC/EMAS™, released in October 1989, updates the company's MSC/MAGNETIC and MSC/MAGNUM products. MSC/EMAS is an electromagnetic analysis system especially suited to the design of modern high-frequency devices. MSC/EMAS is available for IBM, DEC, Apollo, Convex, and Cray computers.
- MSC/MAGGIE[®], for two-dimensional analysis, runs on IBM PCs and compatibles.

MSC offers several educational tools designed to teach the entry-level user how to use MSC/NASTRAN in structural analysis.

- PRENASTRAN is an introductory interactive computer program available for IBM, DEC VAX, and Apollo computers that is intended for the entry-level user or as a review aid for the occasional user of MSC/NASTRAN.
- MSC also sells a computer laboratory manual that may be used in conjunction with PRENASTRAN or separately.
- The company also offers a series of videotaped lectures that are designed to train users in the capabilities of MSC/NASTRAN.

During fiscal 1990, MSC announced an agreement to provide Matra Datavision with a finite element analysis module to be integrated into their Euclid-IS CAD/CAM product. The module, QuickSolver, brings users with little or no finite element analysis background into MSC's client base.

Industry Markets

Approximately 90% of MSC's fiscal 1990 revenue was derived from industrial/manufacturing companies involved in the aerospace, automotive, shipbuilding, industrial and office equipment, nuclear, petrochemical, optic, architectural, and engineering industries. Approximately 4% of fiscal 1990 revenue was derived from government agencies, 4% from data center network services vendors, and 2% from universities.

MSC has in recent years emphasized installation of its products on in-house computers of its customers as opposed to network services vendors' data center installations. Data center usage, however, continues to be an important source of revenue and a means of introducing new users to MSC/NASTRAN. Data centers also provide overflow capacity for customers.

- As of January 31, 1990 MSC/NASTRAN was installed at approximately 26 data centers, compared to 30 data centers as of January 1989.
- As a percent of total revenue, the contribution from data centers has decreased from 5% (\$2.0 million) in fiscal 1989 to 4% (\$1.8 million) in fiscal 1990.

Geographic Markets

Approximately 58% of MSC's fiscal 1990 revenue was derived from the U.S., 20% from the Far East, and 22% from Western Europe. A three-year summary of geographic source of revenue follows:

**THE MACNEAL-SCHWENDLER CORPORATION
THREE-YEAR GEOGRAPHIC SOURCE OF REVENUE SUMMARY
(\$ millions)**

SOURCE	FISCAL YEAR					
	1/90		1/89		1/88	
	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
U.S	\$26.4	58%	\$24.9	62%	\$21.9	63%
Far East (a)	8.8	20%	7.4	19%	5.7	17%
Western Europe	9.8	22%	7.6	19%	6.9	20%
TOTAL	\$45.0	100%	\$39.9	100%	\$34.5	100%

(a) Consists primarily of Far East revenue, with a minor amount from the rest of the world outside Europe.

U.S. regional offices are located as follows:

Western Region: Pasadena (CA)
 Southwest Region: Dallas/Ft. Worth
 Midwest Region: Milwaukee (WI)
 Eastern Region: New York (Long Island)

Additional U.S. sales offices are located in Atlanta (GA), Sacramento (CA), Detroit (MI), Mount Laurel (NJ), and St. Louis (MO). Engineering services offices are located in Detroit (MI) and the Washington, D.C. area.

MSC's European headquarters, located in Munich, manages wholly owned subsidiaries in the U.K., Italy, and the Netherlands. The company also has distributors in Spain, France, Israel, and Norway.

Far East headquarters are in Tokyo. Sales and service are handled through a wholly owned subsidiary in Hong Kong, and a 90% owned subsidiary based in Tokyo.

The company also has representatives in Singapore, South Korea, China, Indonesia, Australia, and Argentina.

FINANCIAL UPDATE TO PROFILE DATED AUGUST 1983*

THE MACNEAL-SCHWENDLER CORPORATION
815 Colorado Boulevard
Los Angeles, CA 90041
(213) 258-9111

Richard MacNeal, Chairman
Joseph F. Gloudeman, President and
CEO
Public Corporation, OTC
Total Employees: 92
Total Revenue, Fiscal Year End
1/31/85: \$15,334,000

THE MACNEAL-SCHWENDLER CORPORATION FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1/85	1/84	1/83	1/82	1/81
Revenue	\$ 15,334	\$ 11,801	\$ 9,221	\$ 7,185	\$ 5,466
. Percent increase from previous year	30%	28%	28%	31%	32%
Income before taxes	\$ 5,625	\$ 4,234	\$ 3,173	\$ 2,591	\$ 1,556
. Percent increase from previous year	33%	33%	22%	67%	35%
Net income	\$ 3,177	\$ 2,535	\$ 1,776	\$ 1,368	\$ 835
. Percent increase from previous year	25%	43%	30%	64%	38%
Earnings per share (a)	\$ 0.54	\$ 0.45	\$ 0.34	\$ 0.26	\$ 0.16
. Percent increase from previous year	20%	32%	31%	63%	33%

- (a) Restated to reflect a 50% stock split, effected in the form of a dividend, to shareholders of record on March 1, 1984.
- Revenue for the six months ending July 31, 1985 reached \$9.8 million, a 39% increase over \$7.0 million for the same period in 1984. Income from continuing operations increased 63% to \$2.4 million from \$1.4 million. Net income for the period decreased 99% from \$1.4 million to \$15,000 because of a \$2.3 million write-off for the discontinued operations of Modular Data Systems, Inc. (MDSI).
 - In July 1984 MacNeal-Schwendler Corporation (MSC) acquired a 35% interest in MDSI, a provider of software, turnkey systems, and professional services to the process manufacturing industry.

*Replaces Financial Update of June 1984

THE MACNEAL-SCHWENDLER CORPORATION

- In August 1985, based on continuing losses of MDSI, MSC announced an after tax write-off of \$2.3 million from its MDSI holdings. The write-off will be classified as a discontinued operation.
- MSC entered a joint venture agreement with Synergistic Technology, Inc. (STI) in early 1985. The two companies will develop and market STI's proprietary Vibration Analysis and Measurement Processor (VAMP) dynamic analysis system.
 - A software interface is currently in development to permit the use of STI/VAMP with MSC/NASTRAN to integrate the dynamic testing and mathematical model analysis processes.
- MSC has created two new departments in order to increase product and service offerings.
 - The Advanced Projects Department will develop new software products.
 - The Engineering Applications Department will provide consulting and analysis services, including custom software development, to MSC software clients and other customers.

SOURCE OF REVENUE

- MSC derives 100% of its revenues from the leasing of MSC/NASTRAN and related software products. Approximately 19% of fiscal 1985 revenue was derived from software leases to service bureaus.
 - As of January 31, 1985, MSC/NASTRAN was installed at approximately 25 service bureaus worldwide. Among the service bureaus offering MSC/NASTRAN are Cybernet (Control Data Corporation), Boeing Computer Services, McDonnell Douglas, UCCEL, and A. O. Smith.

NEW PRODUCTS AND SERVICES

- MSC/NASTRAN can now also operate on mainframes from IBM with VM/CMS operating systems and CDC with NOS/VE operating systems. Versions of MSC/NASTRAN have been introduced for Data General MV Series computers and the Floating Point Systems FPS-164.
- In June 1984 MSC began marketing two new optional software modules for use with MSC/NASTRAN.
 - MSC/ACCESS will allow an engineer to build a custom postprocessor to extract MSC/NASTRAN analysis data. The postprocessor can then request detailed information and receive analysis data for immediate interpretation of results.

THE MACNEAL-SCHWENDLER CORPORATION

- MSC/TRANS is a companion to MSC/GRASP and MSC/ACCESS. It allows the transfer of MSC/NASTRAN data from one computer to another.
- Advanced Projects Department (APD) has introduced two software packages and an upgrade to one of those packages since September 1984. Both packages run on IBM Personal Computers and compatibles.
 - In September 1984 APD began distribution of MSC/pal. MSC/pal is a three-dimensional finite element analysis program for use by mechanical engineers or designers. MSC/pal is priced at \$995.
 - In May 1985 an upgrade called MSC/pal2 was released. MSC/pal2 analyzes quadrilateral plates, shear panels, and curved beams in addition to the beams, springs, dampers, rigid body masses, and elastic links that MSC/pal can analyze. The upgrade also includes additional applied load capabilities, enhanced graphics, and the ability to handle larger, more accurate three dimensional models. MSC/pal2 is priced at \$1,995.
 - In June 1985 APD released MSC/Case which was developed by D. V. Schiavello, Inc. (North Haledon, NJ). MSC/Case is an interactive program that automates the solution of equations used frequently in structural and mechanical engineering applications.
 - MSC/Case is priced at \$895, with an introductory price of \$595 until December 1, 1985.

FINANCIAL UPDATE TO HIGHLIGHT DATED AUGUST 1983

THE MACNEAL-SCHWENDLER CORPORATION
815 Colorado Boulevard
Los Angeles, CA 90041
(213) 258-9111

Richard MacNeal, Chairman and CEO
Joseph F. Gloudeman, President
Public Corporation, OTC
Total Employees: 92
Total Revenue, Fiscal Year End
1/31/84: \$11,801,000

THE MACNEAL-SCHWENDLER CORPORATION FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1/84	1/83	1/82	1/81	1/80
Revenue	\$ 11,801	\$ 9,221	\$ 7,185	\$ 5,466	\$ 4,154
• Percent increase from previous year	28%	28%	31%	32%	47%
Income before taxes	\$ 4,234	\$ 3,173	\$ 2,591	\$ 1,556	\$ 1,149
• Percent increase from previous year	33%	22%	67%	35%	43%
Net income	\$ 2,535	\$ 1,776	\$ 1,368	\$ 835	\$ 607
• Percent increase from previous year	43%	30%	64%	38%	46%
Earnings per share (a)	\$ 0.45	\$ 0.34	\$ 0.26	\$ 0.16	\$ 0.12
• Percent increase from previous year	32%	31%	63%	33%	N/A

- (a) Restated to reflect a 50% stock split, effected in the form of a dividend, to shareholders of record on March 1, 1984.

SOURCE OF REVENUE

- One-hundred percent of MacNeal-Schwendler's fiscal 1984 revenue was derived from the leasing of MSC/NASTRAN and related software products.



COMPANY HIGHLIGHT

**THE MACNEAL-SCHWENDLER
CORPORATION**
815 Colorado Boulevard
Los Angeles, CA 90041
(213) 258-9111

Richard MacNeal, President
Public Corporation, OTC
Total Employees: 72
Total Revenue, Fiscal Year End
1/31/83: \$9,221,000

THE COMPANY

- The MacNeal-Schwendler Corporation (MSC) was incorporated in California in 1963 as an engineering professional services company. Beginning in 1966, MSC was a major contributor to the development of NASA's NASTRAN, a general purpose structural analysis computer program based on the finite element method. In 1971 MSC began offering its own proprietary enhanced version of NASTRAN under the name MSC/NASTRAN. Since 1974 MSC's business focus has been on the development, maintenance, support, and marketing of its MSC/NASTRAN software package.
- MSC made its initial public offering of 1.3 million shares of common stock on May 5, 1983. Of the shares, 375,000 were offered by the company and 925,000 by selling stockholders. Proceeds to the company of nearly \$8 million will be added to working capital and used for general corporate and possible acquisition purposes.
- Revenue for fiscal 1983 increased 28% to \$9.2 million from \$7.2 million in 1982. Net income grew 30% to \$1.8 million from \$1.4 million in 1982. A five-year financial summary follows:

THE MACNEAL-SCHWENDLER CORPORATION

MACNEAL-SCHWENDLER CORPORATION
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1/83	1/82	1/81	1/80	1/79 (a)
Revenue	\$ 9,221	\$ 7,185	\$ 5,466	\$ 4,154	\$ 2,820
• Percent increase from previous year	28%	31%	32%	47%	N/A
Income before taxes	\$ 3,173	\$ 2,591	\$ 1,556	\$ 1,149	\$ 802
• Percent increase from previous year	22%	67%	35%	43%	N/A
Net income	\$ 1,776	\$ 1,368	\$ 835	\$ 607	\$ 417
• Percent increase from previous year	30%	64%	38%	46%	N/A
Earnings per share	\$ 0.51	\$ 0.39	\$ 0.24	\$ 0.18	\$ 0.13
• Percent increase from previous year	31%	63%	33%	38%	N/A

(a) unaudited

- Research and development expenditures were \$1.6 million (18% of revenue) in fiscal 1983 as compared to \$920,000 (13% of revenue) in fiscal 1982. Increased expenditures resulted primarily from development of the MSC/GRASP software package and new versions of MSC/NASTRAN for Cray Research mainframes and Apollo Domain microcomputers.
- MSC has two subsidiary operations:
 - MacNeal-Schwendler GmbH is a wholly owned subsidiary based in Munich.
 - MSC Japan Ltd. is a 90% owned subsidiary based in Tokyo.
- As of January 31, 1983, MSC had 72 employees, segmented as follows:

Marketing	13
Technical	48
Administration	<u>11</u>
	72
- Major competitors to MSC include Swanson Analysis Systems (ANSYS), MARC Analysis Research (MARC), Minicomputer Systems Technology (Abacus), and GEISCO (SUPERB and SUPERTAB).

THE MACNEAL-SCHWENDLER CORPORATION

KEY PRODUCTS AND SERVICES

- One hundred percent of MSC's fiscal 1983 revenue was derived from leasing of MSC/NASTRAN and related software products.
- MSC/NASTRAN is used as a basic computer-aided engineering (CAE) tool to analyze structures and determine strength, safety, and performance characteristics. Types of structural analysis provided by the program include analyses of vibration characteristics, electromagnetism, dynamic response, transient heat transfer, elastic stability, and aeroelastic response.
 - MSC/NASTRAN is used in the aerospace industry to determine stress distribution in major aircraft parts. The same principles have been used in the design of jet, rocket, and other engines, automobiles, trucks, ships, farm and heavy industrial equipment, nuclear containment vessels, helicopters, and spacecraft.
 - The product runs on mainframes from IBM (VS1, VS2, MVS, OS, VM); Amdahl, IteI, Fujitsu, and Seimens (OS, MVS); CDC (Scope, NOS, NOS/BE); Sperry Univac (EXEC 8); and Cray Research (COS, CTSS). MSC/NASTRAN also runs on DEC VAX minicomputers (VMS) and Apollo Domain microcomputers (AEGIS).
 - Since MSC first offered MSC/NASTRAN it has followed a consistent policy of leasing rather than selling its software products. The standard lease agreement specifies minimum monthly payments and additional payments based on usage for large computers and royalties as a percentage of sales for service bureau clients.
 - The minimum monthly payment is \$1,800 for mainframe and minicomputer versions and \$900 for the microcomputer version.
 - The royalty paid by service bureau clients is equal to 30% of their billings to customers for MSC/NASTRAN usage.
 - As of January 31, 1983, MSC had 261 MSC/NASTRAN lease agreements in effect, including 14 university lease agreements priced substantially below commercial rates.
- MSC also markets optional software modules for use with MSC/NASTRAN.
 - MSGMESH is a batch preprocessor that creates finite element models and simplifies the generation of input data for MSC/NASTRAN.
 - MSGVIEW is a postprocessor which provides plots of undeformed structural models and performs graphical diagnostic functions on models created by MSGMESH.
 - MSGSTRESS is a data recovery module which generates summaries of MSGMESH-defined stress distributions.

THE MACNEAL-SCHWENDLER CORPORATION

- MSC/GRASP, a new interactive graphics structural analysis package being developed in phases, offers pre- and postprocessing tools for finite element analysis.
 - The Phase I version is used for output processing and runs on IBM mainframes, DEC VAX minicomputers, and Apollo Domain microcomputers.
 - The Phase II version, scheduled for availability in 1984, will include fully interactive model generation and color graphics.
- In January 1983 MSC entered into an agreement with Apollo Computer to market Domain microcomputers and MSC software as CAE workstations for use in both standalone and distributed environments.
 - There are eight installations of the systems, which are leased for \$900 per month.
 - Apollo Computer is responsible for hardware installation and maintenance.
- MSC entered into a joint marketing agreement with Applicon, a division of Schlumberger Technology, in early 1983. Under terms of the agreement, Applicon receives a commission on sales of turnkey CAD/CAM systems which include MSC/NASTRAN and/or MSC/GRASP. Applicon customers then enter into a standard MSC lease arrangement at the usual minicomputer rates.
- Recent MSC research activities include development of analytical capabilities related to:
 - The material nonlinearity of highly stressed and heated structures common in nuclear power plants and the behavior of new structural materials used to replace steel.
 - Composite materials used in the automotive and aircraft industries to minimize product weight without sacrificing safety or strength.
 - Design optimization features allowing more productive use of MSC/NASTRAN for design refinement.
- MSC is also examining the feasibility of developing a software link between different vendors' computers for use with its micro-based CAE workstations. The company may also develop additional engineering analysis applications for Apollo Domain and other microcomputers.

INDUSTRY MARKETS

- The aerospace industry accounted for a significant amount of MSC's fiscal 1983 revenue. Revenue was also derived from the automotive, shipbuilding, industrial and office equipment, nuclear, petrochemical, optic, architectural, and engineering industry sectors.

THE MACNEAL-SCHWENDLER CORPORATION

- Thirty service bureau clients accounted for 25% of 1983 revenue.
 - Five percent of revenue was from Control Data's CYBERNET network, which offers MSC/NASTRAN in the U.S., Western Europe, Australia, and Latin America.
 - Other service bureau clients include Boeing Computer Services, United Information Services, McDonnell Douglas Automation, University Computing, and A.O. Smith.
 - Foreign service bureau clients using MSC/NASTRAN include Century Research Corporation and Mitsubishi Research Institute in Japan, SIA and SCICON in the U.K., GSIE in France, IABG in Germany, ECN in The Netherlands, and INTEMA in Italy.
- Three percent of revenue was from government agencies and 2% from universities.

GEOGRAPHIC MARKETS

- MSC's fiscal 1983 revenue was distributed approximately as follows:

U.S.	59%
Far East	21
Europe	15
Canada, South America, and Australia	<u>5</u>
	100%

- U.S. regional sales offices are in Los Angeles, Grapevine (TX), New Berlin (WI), and Oakdale (NY).
- Foreign sales and service is conducted through two subsidiaries and two distributors.
 - MacNeal-Schwendler GmbH, a subsidiary based in Munich, markets products in Europe.
 - MSC Japan Ltd., a Tokyo-based subsidiary, conducts sales in the Far East.
 - Distributors are located in Australia and Argentina.

COMPUTER HARDWARE AND SOFTWARE

- MSC maintains the following equipment at its Los Angeles headquarters:
 - 1 DEC VAX-11/780, VMS.
 - 6 Apollo Domains, AEGIS.



Vendor Profile

A Publication from INPUT's Vendor Analysis Program – U.S.

August 1996

Macromedia, Inc.

Chairman & CEO: John C. Colligan
600 Townsend Street
San Francisco, CA 94103-4945
Phone: (415) 252-2000
Fax: (415) 626-0554
Internet: <http://www.macromedia.com>

Status:	Public
Employees:	450 (8/96)
Revenue:	\$116,691,000
Fiscal Year End:	3/31/96

Key Points

- Macromedia, Inc. is a supplier of integrated software tools and services to the graphics, multimedia, and Web publishing communities. The company develops, markets, and supports a line of software for both Windows and Macintosh platforms.
- In July 1996, Macromedia unveiled the newest version of Shockwave, containing CD-quality streaming audio.
- Also in July 1996, the company announced the Government Connection, a new program

designed to better serve the pricing, product, and distribution needs of government resellers.

- In March 1996, Macromedia announced an agreement to acquire iband, the developer of Backstage, a visual Web site development environment.
- Also in March 1996, the company announced it was developing Microsoft ActiveX Technologies applications for the Internet and multimedia capabilities on multiple platforms, including the Macintosh.

Company Description

Macromedia produces digital arts, multimedia, and Web publishing software for the Windows operating system and the Macintosh platform.

These authoring and production tools are used to create interactive multimedia applications and printed materials for business communications, the arts and entertainment, and education.

Using Macromedia's products, developers can create content for delivery over a range of digital formats, including print, video, film, the Web, Internet, intranet, CD ROM, Digital Video Disk (DVD), Enhanced CD, and interactive television.

In August 1995, Macromedia made a secondary public offering of 2.1 million shares of its common stock, generating approximately \$54 million for the company.

Organization and Structure

Macromedia's key executives are summarized below.

Macromedia, Inc. Key Executives

Name	Title
John C. (Bud) Colligan	Chairman and CEO
Richard B. Wood	VP Operations and CFO
Phillip Schiller	VP Product Management
Susan Gordon Bird	VP Worldwide Sales
James R. Von Ehr, II	VP Product Development/Java
Kevin F. Crowder	VP Product Integration
Norm Meyrowitz	Senior VP Engineering
Steven Kusmer	VP Multimedia Products
Samantha Seals-Mason	VP Digital Arts Products
Jim Funk	VP Corporate Development

Macromedia is headquartered in San Francisco (CA) and has offices and subsidiaries in the U.K. (Macromedia Europe

Limited), Australia (Macromedia Asia Pacific), and Japan (Macromedia Japan KK).

Company Strategy

Macromedia's strategy is to develop a set of cross-platform applications, for Windows and Macintosh, for all the major media types (animation, graphics, 3-D, sound, video, and fonts) and to provide authoring tools that integrate these media types and deliver them across multiple platforms (CD-ROM, Enhanced CD, and the Internet).

To accomplish this, the company bundles its products as Macromedia Studios, to provide a complete, integrated set of tools for those involved in the development and delivery of multimedia and graphics content.

By developing and packaging Macromedia Studios, the company seeks to establish a framework ensuring that developers can "Author Once, Publish Anywhere."

Financials

Macromedia's fiscal 1996 revenue reached \$116.7 million, an increase of 109% revenue of \$55.9 million for fiscal 1995. Net income was approximately \$23 million, compared to net income of \$6.5 million in fiscal 1995.

Macromedia management attributed revenue growth to:

- Strong growth in the company's principal products, which grew 113% during the year
- The company's development of its customer base, indirect sales channels, and strategic partnerships

A five-year financial summary is shown on the following page.

Macromedia, Inc.
Five-Year Financial Summary
 (\$ Millions, except per-share data)

Item	Fiscal Year				
	3/96	3/95	3/94	3/93	3/92
Revenue	\$116.7	\$55.9	\$37.5	\$31.5	\$29.3
• Percent change from previous year	109%	49%	19%	8%	N/A
Income before taxes	\$37.8	\$7.6	\$3.8	N/A	N/A
• Percent change from previous year	397%	100%	N/A	N/A	N/A
Net income	\$23.0	\$6.5	\$3.5	N/A	N/A
• Percent change from previous year	254%	86%	N/A	N/A	N/A
Earnings per share	\$0.59	\$0.19	\$0.12	N/A	N/A
• Percent change from previous year	210%	59%	N/A	N/A	N/A

In October 1995, the company paid a two-for-one split of its common stock as a stock dividend.

Interim Results

Revenue for the three months ending June 30, 1996 was \$35 million, an increase of 47% over \$23.9 million for the same period in 1995. Net income was approximately \$7.1 million (\$0.18 per share) compared to net income of \$4.4 million (\$0.13 per share) for the same period a year ago.

Revenue Analysis by Product/Service

Approximately 96% (\$112.6 million) of Macromedia's fiscal 1996 revenue was derived from software products, an increase of 110%

over software product revenue of \$53.5 million in fiscal 1995. The remaining 4% (\$4.1 million) of revenue was derived from training, consulting, and maintenance services.

Market Financials

Macromedia sells its products and services to the graphics, multimedia, and Web publishing communities.

Geographic Markets

Approximately 58% of fiscal 1996 revenue was derived from the U.S., 24% from Europe, and 18% from the Pacific Rim.

A three-year geographic source of revenue summary is shown on the following page.

Macromedia, Inc.
Three-Year Geographic Source of Revenue Summary
 (\$ Millions)

Geographic Market	Fiscal Year					
	3/96		3/95		3/92	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
U.S.	\$67.6	58%	\$37.4	67%	\$28.7	77%
Europe	28.1	24%	8.7	16%	3.2	8%
Pacific Rim	21.0	18%	9.8	17%	5.6	15%
Total	\$166.7	100%	\$55.9	100%	\$37.5	100%

Acquisitions

Macromedia has made a number of acquisitions to foster growth and expand and solidify the company's product offerings.

Descriptions of the acquisitions follow:

- In March 1996, Macromedia acquired iband, a developer of a family of tools used to build dynamic Web sites, for 860,000 shares of Macromedia common stock.
- In December 1995, the company acquired OSC, a developer of digital audio production software, for 62,001 shares of Macromedia common stock.
- In August 1995, the company acquired Fauve Software for 580,000 shares of common stock. Fauve is the developer of xRes, a full-featured image editing and composition application for Macintosh and Windows, and Matisse, a full-color painting program for Windows.
- In January 1995, Macromedia merged with Altsys, a designer of font editing and graphics design software programs for business use. Macromedia issued approximately 4.3 million shares of its

common stock in exchange for all of the common stock of Altsys.

Employees

As of March 31, 1996, Macromedia had 396 full-time employees, segmented as follows:

North American sales	45
International sales	26
Marketing	77
Development/quality assurance	191
Finance and administration	<u>57</u>
	396

The company currently has 450 employees.

Key Products and Services

Macromedia's software products are used by multimedia, graphic arts, Web, and learning professionals independently or for organizations ranging from large corporations to small companies, as well as educational institutions.

The company groups its products into "Studios," each consisting of a suite of Macromedia products designed to meet the needs of individuals involved in the development and delivery of multimedia and

graphics content by providing a complete, integrated set of tools.

- Macromedia Studios are based on the Macromedia Open Architecture (MOA) which allows users to leverage their understanding of one application across an entire product line.
- The Macromedia Information Exchange (MIX) enables one Studio application to present data to another studio application in the most appropriate form, thus enhancing ease-of-use and productivity.
- The Macromedia User Interface (MUI) is consistent across all studio applications and contains a number of third party plug-ins.

Macromedia Studios include:

- *Director Multimedia Studio*—providing software tools for multimedia and the Internet. This Studio includes Director 5.0, SoundExit 16 plus DECK II for Macintosh, a general purpose sound editor purchased through a license agreement with Sonic Foundry for Windows, Extreme 3D, and Macromedia xRes 2.0
- *FreeHand Graphics Studio*—providing software tools for graphic design. This Studio includes FreeHand, Extreme 3D, Macromedia xRes, and Fontographer.
- *Authorware Interactive Studio*—allows users to create interactive information applications. The Studio includes Authorware, Director, Backstage Designer, Macromedia xRes, Extreme 3-d, SoundEdit 16 plus DECK II for Macintosh, and Sound Forge xp for Windows.

Descriptions of Macromedia's complete product list follow:

Multimedia Products

Authorware is designed for authoring and delivering interactive information.

Authorware provides an object-oriented, icon-based authoring environment with hypertext and media capabilities, data measurement functions, and media integration controls. The software is targeted to computer-based training specialists and educators, and multimedia professionals, and is designed for use on corporate intranets.

Director allows users to import and integrate media elements such as 2D and 3D graphics, animation, sound, and digital audio from a wide variety of sources to create stand-alone interactive applications. *Director* is targeted at design, graphics, animation, and video professionals who require a selection of creative tools for their multimedia productions.

SoundEdit 16 plus DECK II combines two audio tools for a complete digital audio package.

- SoundEdit 16 is a software-only recording studio that lets users create audio for everything from multimedia to music to the Internet.
- DECK II features multitrack recording, macro-editing, and complex audio arrangement capabilities.

Web Development Products

Backstage Designer Plus allows Windows users to create their own dynamic Web sites without having to use HTML.

Backstage Desktop Studio equips Web sites with desktop database connectivity for a customized user experience.

Backstage Enterprise Studio equips Web sites with client/server database connectivity for sophisticated business applications.

Shockwave is a compression standard technology for playing multimedia and graphics files created with Macromedia tools over the Web and corporate intranets. Using Shockwave, existing and new users of Macromedia's products can "shock" or translate Authorware, Director, SoundEdit 16, and FreeHand files for use on the Internet and intranets.

Graphic Arts Products

FreeHand is a design and illustration software package that offers a feature set and customizable working environment for graphic designers, artists, and illustrators. FreeHand's text environment features text style sheets, copy fitting, and column balancing, spelling checker, hyphenation, tabs, text on path, inline graphics, 500 fonts, and 10,000 clip-art images.

Extreme 3D features modeling, animation, and rendering. The product's interface conforms to popular illustration, animation, and rendering standards, and offers functionality and integration with Macromedia xRes, FreeHand, Director, and Authorware.

Fontographer is a software application for creating and modifying fonts in Windows and on Macintosh. Fontographer offers ease-of-use and precision drawing tools and is designed for graphic artists, type designers, and technical professionals who want to modify their existing fonts or create new fonts from scratch.

Macromedia xRes is a cross-platform image editing and design software application that lets users create and edit high-resolution files without using extra RAM or hardware. The

product features an Adobe Photoshop-style interface, keyboard shortcuts, imaging conventions, multiple undos, artistic brushes and textures, and floating text objects. Macromedia xRes also supports Web-ready formats such as GIF89a, Progressive JPEG, and PNG.

Clients

Examples of companies who use Macromedia's products includes America Online, Microsoft, Netscape, Apple, Silicon Graphics, Sun Microsystems, and NetManage.

Marketing and Sales

Macromedia generates awareness and demand for its products through public relations activities, advertising, product reviews, and national and local trade shows.

The company also uses direct mail to introduce and educate customers about new products and enhancements, and to cross-sell additional products to current customers.

The company's sales and distribution channels are targeted at the buying patterns of the company's two principal customer types: multimedia and graphic arts professionals.

Domestically, Macromedia sells and distributes its products primarily through large national software distributors, such as Ingram Micro, Merisel, MicroAge, and Tech Data. The company sells and distributes the Authorware Interactive Studio, Director Multimedia Studio, and the FreeHand Graphics Studio through 170 VARs and high-end dealers.

Macromedia sells its product to educational institutions primarily through distributors such as Ingram Micro, Douglas Stewart, and Educational Technology Specialists.

The company also maintains OEM relationships with many hardware and software vendors that bundle Macromedia products with their own complementary hardware or software products and pay the company per unit royalty. These OEMs include ASCII, Digital, Eastman Kodak, JVC, NEC, Samsung, and VideoLogic.

Internationally, the company has more than 80 distributors in more than 50 countries.

Alliances

A key element of Macromedia's marketing strategy is to work with industry leaders to develop the multimedia market and gain broad acceptance of the company's products on all leading platforms.

Examples of such arrangements include the following:

- Netscape Communications features Shockwave in the Netscape Power Pack 2.0.
- Microsoft and Macromedia have an agreement integrating Macromedia Shockwave with Microsoft ActiveX technologies and Microsoft Internet Explorer 3.0.
- America Online licenses and distributes Shockwave for use in its services.
- Apple Computer and Macromedia have an agreement to bundle Shockwave with the Apple Internet Connection Kit, which is included in all Internet-ready Macintosh computers.
- Macromedia has agreements to develop industry-standard multimedia playback technology for IBM's OS/2 Warp and Microware's OS/9 in addition to Windows and Macintosh operating systems, and for

interactive television set-top boxes from Online Media and Apple Computer.

Competition

A number of companies currently offer products that compete directly or indirectly with one or more of Macromedia's products. These companies include Adobe Systems, Aimtech, Apple, Asymetrix, Autodesk, Corel, Microsoft, Quark, and Strata.

Assessment

Macromedia feels its strengths include:

- The rapidly multiplying number of Shockwave users (more than 6 million downloads as of 6/96)
- The company's "Studio" product packages
- Name recognition and publicity gained from Shockwave
- Agreements with the two major Web browser developers (Netscape and Microsoft) and the largest commercial online access provider (AOL)
- Cross-platform products



**COMPANY
PROFILE**

**MADIC-COMPUFACT
CORPORATION**

7441 Lincoln Way
Suite 200
Garden Grove, CA 92641
Phone: (714) 891-6336
Fax: (714) 897-7616

President & CEO: Al Alteslane
Status: Subsidiary
Parent: The Devers Group
Total Employees: 60
Total Revenue: \$9,000,000*
Fiscal Year End: 12/31/93

* Company estimate

Key Points

- Madic-Compufact Corporation (MCC) targets its turnkey systems and associated support services to discrete and job shop environments.
- The company's revenue has been stable at \$9 million over the last three years and the firm has posted a profit every quarter during that period.

Company Description

Madic-Compufact Corporation (MCC) provides on-line, interactive, integrated business control systems using "closed loop" MRPII principles. The company's primary product is the MAN-FACT II[®] system.

MCC's turnkey systems and professional services are marketed to a range of discrete manufacturing and distribution companies. Currently, MCC supports over 325 manufacturing facilities in the U.S., Canada, Australia and the U.K.

MCC is one of four subsidiaries of The Devers Group, headquartered in Chicago (IL). All four subsidiaries are suppliers of hardware, software, and services to major vertical markets. The Devers Group generates revenue in excess of \$65 million annually, and employs over 600 computer professionals.

Strategy

MCC's strategy is to continue to build increasing integration between common desktop applications and MAN-FACT II.

The company also plans significant sales expansion in early 1994.

Financials

MCC's 1992 revenue was \$9 million; the same as 1991 revenue. MCC management estimates 1992 revenue will remain at \$9 million.

Market Financials

MCC targets the manufacturing/distribution industry, specifically addressing the requirements of discrete and job shop environments.

Geographic Markets

Over 95% of MCC's revenue is derived from the U.S. and the remainder from international sources.

Key Products and Services

Approximately 65% of MCC's revenue is derived from turnkey systems and 35% from consulting, custom programming, and education and training professional services.

MCC's primary offering, the MAN-FACT II system, is sold primarily to discrete and job shop environments.

MAN-FACT II is available for Prime, Hewlett-Packard, and IBM computers and other UNIX-based systems.

- MAN-FACT II modules include:
 - Bills of Material and Routings
 - Configuration Management
 - Capacity Requirements Planning
 - Inventory Control
 - Business Resource Requirements Planning
 - Master Production Scheduling
 - Material Requirements Planning
 - Physical Inventory and Cycle Counting
 - Work-In-Process and Shop Floor Control
 - Bar Coding
 - Purchasing and Receiving
 - Quality Assurance
 - Distribution & Replenishment Activities
 - Management Reporting
 - Marketing
 - Sales Order, Quote, Shipping and Forecasting
 - Accounts Payable
 - Accounts Receivable
 - Cost Accounting
 - Fixed Assets
 - General Ledger
 - Payroll and Personnel
 - System Administration
 - Field Service Billing System
- In addition to providing FDA lot control, serial number control, finite and infinite capacity requirements planning and sales forecasting, MAN-FACT II's strengths include its configuration management, project control, cost accounting, distribution tracking and user interface features.
- System prices range from \$40,000 to \$750,000, including hardware, depending on the modules selected.
- There are currently over 325 MAN-FACT II installations.

Professional services provided by MCC include project planning, business consulting, custom programming and education (both standard and custom/on-site classes).

Marketing and Sales

MCC's products are marketed in the U.S., Canada, the U.K. and Australia, either directly or through distributors.

- MCC's corporate headquarters is in Garden Grove (CA).

- MCC is also represented by distributors in the Pacific Northwest (Nova Information Systems), Canada (Infonet), Australia (CMS) and the U.K. (MSC Solent).

Alliances

MCC has alliances/marketing agreements with various vendors, including Hewlett-Packard and IBM.

COMPANY PROFILE

MADIC-COMPUFACT CORPORATION

7441 Lincoln Way
Suite 200
Garden Grove, CA 92641
(714) 891-6336

Al Alteslane, President and CEO
Subsidiary of The Devers Group
Total Employees: 55
Total Revenue, Fiscal Year End
12/31/91: \$9,065,000

The Company

Madic-Compufact Corporation (MCC) provides on-line, interactive, integrated business control systems using "closed loop" MRPII principles. MCC's turnkey systems and professional services are marketed to a range of discrete manufacturing and distribution companies. Currently, MCC supports over 325 manufacturing facilities in the U.S., Canada, Australia, and the U.K.

Madic-Compufact is one of four subsidiaries of The Devers Group, headquartered in Chicago (IL). All four subsidiaries are suppliers of hardware, software, and services to major vertical markets. The Devers Group generates revenue in excess of \$65 million annually, and employs over 600 computer professionals.

MCC's 1991 revenue reached over \$9 million, compared to 1990 revenue of \$8 million. MCC management estimates 1992 revenue will remain at \$9 million.

Key Products and Services

Approximately 65% of MCC's 1991 revenue was derived from turnkey systems and 35% from consulting, custom programming, and education and training professional services.

MCC's primary offering is the MAN-FACT[®] II system which is sold primarily to discrete and job shop environments.

- MAN-FACT II is available for Prime, Hewlett-Packard, and IBM computers and other UNIX-based systems.
- MAN-FACT II modules include:
 - Bills of Material and Routings
 - Configuration Management
 - Capacity Requirements Planning
 - Inventory Control

- Business Resource Requirements Planning
 - Master Production Scheduling
 - Material Requirements Planning
 - Physical Inventory and Cycle Counting
 - Work-In-Process and Shop Floor Control
 - Purchasing and Receiving
 - Quality Assurance
 - Distribution & Replenishment Activities
 - Management Reporting
 - Marketing
 - Sales Order, Quote, Shipping, and Forecasting
 - Accounts Payable
 - Accounts Receivable
 - Cost Accounting
 - Fixed Assets
 - General Ledger
 - Payroll and Personnel
 - System Administration
 - Field Service Billing System
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 - System prices range from \$40,000 to \$750,000, including hardware, depending on the modules selected.
 - There are currently over 325 MAN-FACT II installations.

Professional services provided by MCC include project planning, business consulting, custom programming, and education (both standard and custom/on-site classes).

Industry Markets

MCC targets the manufacturing/distribution industry, specifically addressing the requirements of discrete and job shop environments.

Geographic Markets

Over 95% of MCC's revenue is derived from the U.S. and the remainder from international sources.

MCC's products are marketed in the U.S., Canada, the U.K., and Australia, either directly or through distributors.

- MCC's corporate headquarters is in Garden Grove (CA). Field offices are maintained in Dallas (TX) and Santa Clara and Woodland Hills (CA).
- MCC is also represented by distributors in the Pacific Northwest (Nova Information Systems), Canada (Infonet), Australia (CMS), and the U.K. (MSC Solent).

COMPANY PROFILE

MADIC-COMPUFACT CORPORATION

7441 Lincoln Way
Suite 200
Garden Grove, CA 92641
(714) 891-6336

Al Alteslane, President and CEO
Subsidiary of The Devers Group
Total Employees: 55
Total Revenue, Fiscal Year End
12/31/90: \$8,000,000

The Company

Madic-Compufact Corporation (MCC) provides on-line, interactive, integrated business control systems using "closed loop" MRP II principles. MCC's turnkey systems and professional services are marketed to a range of discrete manufacturing and distribution companies. Currently, MCC supports over 300 manufacturing facilities in the U.S., Canada, Australia, and the U.K.

Madic-Compufact is one of four subsidiaries of The Devers Group, headquartered in Chicago (IL). All four subsidiaries are suppliers of hardware, software, and services to major vertical markets. The Devers Group generates revenue in excess of \$65 million annually, and employs over 600 computer professionals.

MCC's 1990 revenue reached approximately \$8 million. MCC management estimates 1991 revenue will reach \$9 million.

Key Products and Services

Approximately 65% of MCC's 1990 revenue was derived from turnkey systems and 35% from consulting, custom programming, and education and training professional services.

MCC's primary offering is the MAN-FACT[®] II system which is sold primarily to discrete and job shop environments.

- MAN-FACT II is available for Prime, Hewlett-Packard, and IBM computers and other UNIX-based systems.
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 - Bills of Material and Routings
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 - Capacity Requirements Planning
 - Inventory Control
 - Business Resource Requirements Planning

- Master Production Scheduling
 - Material Requirements Planning
 - Physical Inventory and Cycle Counting
 - Work-In-Process and Shop Floor Control
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 - Quality Assurance
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Industry Markets

MCC targets the manufacturing/distribution industry, specifically addressing the requirements of discrete and job shop environments.

Geographic Markets

Over 95% of MCC's revenue is derived from the U.S. and the remainder from international sources.

MCC's products are marketed in the U.S., Canada, the U.K., and Australia either directly or through distributors.

- MCC's corporate headquarters is in Garden Grove (CA). Field offices are maintained in Dallas (TX) and Santa Clara and Woodland Hills (CA).
- MCC is also represented by distributors in the Pacific Northwest (Nova Information Systems), Canada (Infonet), Australia (CMS), and the U.K. (MSC Solent).



COMPANY PROFILE

MADIC-COMPUFACT CORPORATION

5200 Great America Parkway
Suite 100
Santa Clara, CA 95054
(408) 988-8311

7441 Lincoln Way
Suite 200
Garden Grove, CA 92641
(714) 891-6336

Al Alteslane, President and CEO
Subsidiary of The Devers Group
Total Employees: 85
Total Revenue, Fiscal Year End
12/31/88: \$14,000,000*

*INPUT estimate (pro forma)

The Company

Madic-Compufact Corporation provides turnkey systems and associated support services to process, repetitive, job shop, and diversified multiplant manufacturing companies. The company is an authorized Prime distributor and a Hewlett-Packard value-added remarketer.

Madic-Compufact was formed in March 1989 with the merger of Madic Corporation and CSC Compufact.

- Madic Corporation was formed in 1983 by the merger of the continuing operations of Industry Data Services, Inc. and Mandala Information Systems, the original developer of the MADIC software package.
- Madic was acquired by The Devers Group in August 1986.
- As of December 1988, Madic had approximately 40 employees and revenue of \$7 million.
- COMPUFACT was formed in 1983 with the acquisition of the assets of Manufacturers Resources and Planning, Inc. (MRP) and all rights to its MAN-FACT[®] II set of manufacturing and financial application software products.
- COMPUFACT operated as a private company until September 1985 when it was acquired by Computer Sciences Corporation (CSC). COMPUFACT became a wholly owned subsidiary of CSC and was renamed CSC Compufact.
- In March 1989, CSC Compufact was sold to Madic Corporation for an undisclosed sum.

Madic-Compufact is currently one of four subsidiaries owned by The Devers Group, located in Chicago (IL).

- The Devers Group, a private company with 1988 revenue of \$85 million, has a net worth of approximately \$25 million and over 750 employees.
- The group's other subsidiaries are suppliers of hardware, software, and services and include the following:
 - World Computer Corporation, headquartered in Auburn Heights (MI), provides financial systems to credit unions.
 - Network Computing Corporation, headquartered in Charlotte (NC), provides processing services to utility companies.
 - Global Turnkey Systems, headquartered in Waldwick (NJ), provides systems to the lumber, publishing, and distribution industries.

Pro forma revenue from the operations of Madic and CSC Compufact for 1988 is estimated to be \$14 million. Madic-Compufact's 1989 revenue will reach approximately \$16 million.

Madic-Compufact's primary competitor is ASK Computer Systems.

Key Products and Services

It is estimated Madic-Compufact's 1989 revenue will be derived approximately as follows:

Turnkey systems	70%
Maintenance	15%
Implementation/education/ customer programming	<u>15%</u>
	100%

Madic-Compufact currently markets and supports two manufacturing and financial turnkey systems--The MADIC[®] System and MAN-FACT II. Currently, Madic-Compufact supports over 300 manufacturing facilities throughout the U.S., Canada, and Australia.

The MADIC System, first introduced in 1973, is currently sold primarily to discrete, repetitive, and multiplant manufacturing companies.

- The MADIC System is made up of six subsystems and 21 modules as follows:
 - *Core Manufacturing System:*
 - General System Parameters
 - Inventory, including Lot Control
 - Bills of Materials
 - Work in Progress
 - Purchasing
 - MRP/Master Scheduling
 - *Advanced Manufacturing System:*
 - Configuration Control
 - Plant Maintenance
 - Resource Planning
 - Quality Assurance
 - Project Control
 - *Decision Support System:*
 - Corporate Planning, including management reporting and key operating statistics
 - *General Accounting System:*
 - Accounts Payable
 - Accounts Receivable
 - General Ledger
 - Fixed Assets
 - Cost Accounting
 - Payroll
 - *Distribution System:*
 - Marketing, including Sales Orders, Sales Forecasting, and Price Lists
 - Field Service, including Serial Number Control
 - *Human Resources:*
 - Personnel Management, including Employee Information
- The MADIC System features Federal Drug Administration Lot Control, Serial Number Control, and multiplant capabilities.

- The MADIC System runs under the PICK operating system on Prime 50 series super-minicomputers and HP 9000 Series computers.
- System prices vary according to the hardware supported and generally range from \$16,000 to \$320,000. There are currently over 125 systems installed.

The MAN-FACT II product, first marketed in 1976, is sold primarily to discrete, job shop, and repetitive manufacturers.

- Throughout the past 13 years, significant development dollars have been invested in MAN-FACT II to ensure that it is a state-of-the-art manufacturing solution.
- MAN-FACT II is comprised of six major subsystems and 28 modules as follows:

- *Base System:*

- Inventory Control
- Physical Inventory
- Bills of Material/Routing
- Management Reporting
- Configuration Management

- *Vendor Management:*

- Accounts Payable
- Purchasing & Receiving

- *Production Control:*

- Work in Progress
- Shop Floor Control
- Costing Accounting
- Distribution
- Project Management
- Quality Assurance

- *Elf & Security:*

- Screen Painter
- Menu Generation
- Application Generation
- Application Security

- *Customer Management:*

- Sales Order Entry
- Marketing
- Model Configurator
- Accounts Receivable

- *Production Planning:*

- Master Production Scheduling
- Material Requirements Planning
- Capacity Requirements Planning
- Business Requirements Planning

- Additional modules include Automotive Release System, DD250 Reporting, Field Service, Fixed Assets, General Ledger, and Payroll & Personnel.

- MAN-FACT II features include program and menu generation tools, actual/average/standard costing, electronic data interchange capabilities, and multiple allocations.
- MAN-FACT II runs on Prime 50 Series computers under Prime Information and HP systems.
- System prices range from \$40,000 to \$750,000, including hardware, depending on the modules selected.
- There are currently over 130 MAN-FACT II installations.

Support services provided by Madic-Compufact include implementation, education and training, and custom programming.

Industry Markets

Madic-Compufact derives its revenue from discrete, process, repetitive, and job shop manufacturers, as well as distributors.

Clients range from smaller companies (35 employees and \$5 million in annual sales) to Fortune 500 companies.

Geographic Markets

Approximately 95% of Madic-Compufact's 1989 revenue will be derived from the U.S. and 5% from international sources.

Madic-Compufact's products are marketed in the U.S., Canada, and Australia.

Madic-Compufact's two corporate offices are located in Santa Clara and Garden Grove (CA). The company maintains field offices in Rolling Meadows (IL) and Dallas (TX).

Madic-Compufact is also represented by distributors in the Pacific Northwest (Nova Information Systems, Seattle, WA), New England (Manufacturing Success, Boston, MA), Canada (Computer Sciences Corporation), and Australia (CMS and Pick Power).

Computer Hardware

Madic-Compufact has the following computers installed:

- Santa Clara (CA):
 - Prime 9955
 - Prime 2250
 - Honeywell/Ultimate Model 25
- Garden Grove (CA):
 - Prime 9655
 - Prime 2450
 - Prime 2755
 - HP 825

COMPANY PROFILE

MADIC CORPORATION
3960 Freedom Circle
Santa Clara, CA 95054-1289
(408) 988-8311

James Weil, President
Private Corporation
Total Employees: 125
Total Revenue, Fiscal Year End
12/31/85: \$15,000,000

THE COMPANY

- Madic Corporation develops, markets, and supports an integrated corporate information system for discrete job shop, repetitive, diversified multi-plant, and process manufacturing companies. The MADIC® System is available as a turnkey system, application software product, or remote computing service.
 - Madic Corporation was formed in 1983 by the merger of the continuing operations of Industry Data Services, Inc. (IDS) and Mandala Information Systems, the original developer of the MADIC software package.
 - The initial development of the MADIC software was begun in the mid-1970s by Mandala's founder Robert Richter, now Madic's senior vice president and chief technical officer. IDS has had a third-party marketing agreement with Mandala for the MADIC software since 1979.
- Madic's 1985 revenue reached an estimated \$15 million, about the same as in 1984.
- As of December 30, 1985, the company had 125 employees, segmented as follows:

Sales	28
Marketing/marketing communications	5
Engineering	44
Customer support	26
Computer operations	6
General and administrative	<u>16</u>
	125
- Major competitors for manufacturing turnkey systems include ASK Computer Systems, NCA Corporation, and Xerox Computer Systems. Manufacturing software competition comes from Cullinet Software and IBM.

KEY PRODUCTS AND SERVICES

- Madic Corporation's 1985 revenue was derived from the MADIC® System that is available either as a turnkey system, software product, or remote computing service. Madic estimates that 1985 revenue was derived as follows:

Turnkey systems	75%
Software products	17
Remote computing	4
Other (i.e., education and training)	<u>4</u>
	100%

- The MADIC System is marketed to customers in discrete, process, job shop, repetitive, and diversified multi-plant manufacturing. Manufacturing customers range in company size from \$5 million a year to \$1 billion plus.
- The MADIC software runs under the PICK® and VM® operating systems on a variety of computers, including the Prime 50 series super-minicomputers and IBM 4300 mainframes. Software only pricing starts at \$50,000. Over 125 software and turnkey systems have been installed in the U.S. and Canada.
- The system provides data base management, reporting, and accounting controls. It will also support Federal Drug Administration lot control and government reporting functions. MADIC consists of 22 modules that can be purchased and installed as a complete system or on a modular basis. Modules include the following:
 - Accounts Payable.
 - Accounts Receivable.
 - Bills of Material.
 - Configuration Control.
 - Corporate Planning.
 - Cost Accounting.
 - Field Service.
 - General Ledger.
 - General System.
 - Inventory.
 - Marketing.
 - MRP/master Scheduling.
 - Payroll.
 - Personnel.
 - Plant Maintenance.
 - Project Control.
 - Purchasing.
 - Quality Assurance.
 - Work in Process.

MADIC CORPORATION

- Resource Planning.
 - Fixed Assets.
 - Contract Administration.
- Madic also provides the system to approximately 30 remote computing customers.
 - The timesharing service generates approximately \$50,000 per month.
 - Users are typically new clients testing MADIC software capabilities prior to purchasing a system.

INDUSTRY MARKETS

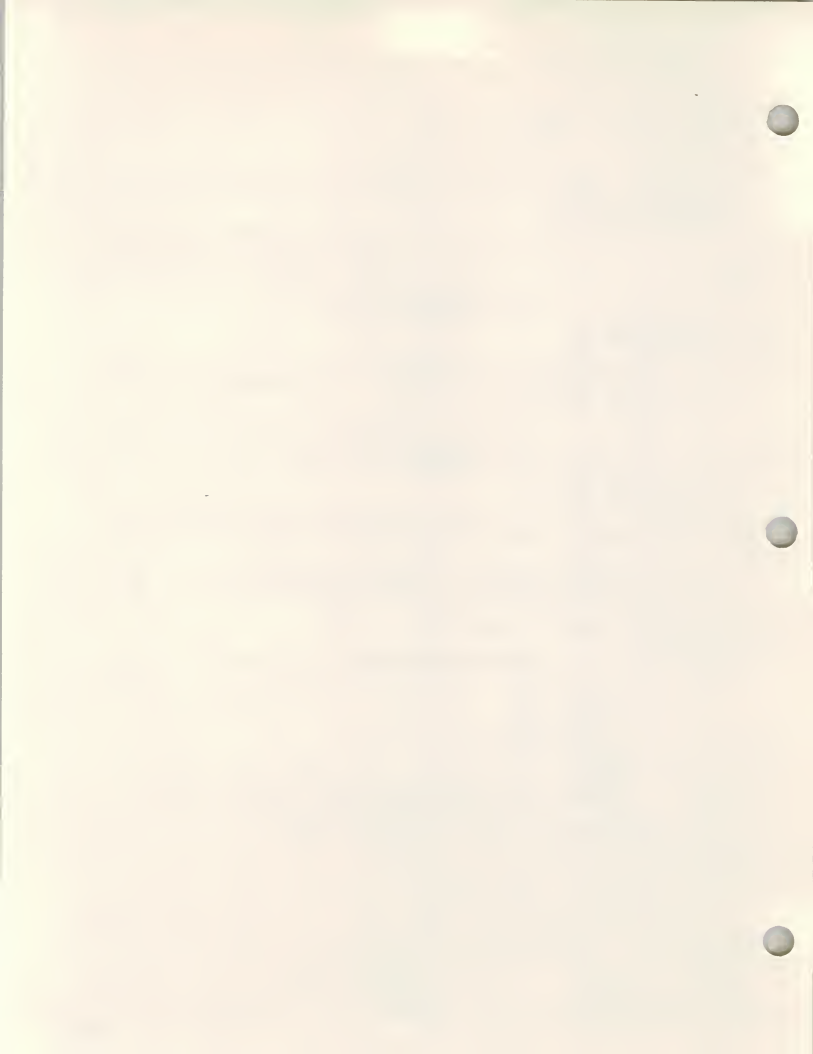
- Madic's 1985 revenue was derived from customers in the discrete and process manufacturing industries, ranging in size from small start-up companies to Fortune 500 firms.
- The company estimates that the major portion of 1986 revenue will be derived from sales to discrete and repetitive manufacturing companies with \$5 million to \$100 million in annual revenue.

GEOGRAPHIC MARKETS

- One hundred percent of Madic's 1985 revenue was derived from U.S. customers.
- Branch offices are located in Boston, Chicago, Dallas, Parsippany (NJ), and Anaheim, Emeryville, Santa Clara, and Woodland Hills (CA).

COMPUTER HARDWARE AND SOFTWARE

- Madic has the following equipment installed at its Santa Clara headquarters:
 - 2 Prime 9950s.
 - 1 Prime 750.
 - 1 Prime 2250.
 - 1 IBM 4361-5.
- The Anaheim, Woodland Hills, and Boston branches each maintain a Prime 450. The New Jersey branch has a Prime 2550 installed.
- Customers can access Madic's network via dial-up and leased lines.



COMPANY PROFILE*

MADIC CORPORATION
3960 Freedom Circle
Santa Clara, CA 95054-1207
(408) 988-8311

Richard B. Wilke, Chairman
Donald W. Gouldsmith, President and
CEO
Private Corporation
Total Employees: 120
Total Revenue, Fiscal Year End
12/31/84: \$15,000,000

THE COMPANY

- Madic Corporation develops, markets, and supports an integrated corporate information system for discrete and process manufacturing companies. The MADIC® System is available as a turnkey system, application software product, or remote computing service.
 - Madic Corporation was formed in 1983 by the merger of the continuing operations of Industry Data Services, Inc. (IDS) and Mandala Information Systems, the original developer of the MADIC software package.
 - The initial development of the MADIC software was begun in the mid-1970s by Mandala's founder Robert Richter, now Madic's senior vice president and chief technical officer. IDS had had a third-party marketing agreement with Mandala for the MADIC software since 1979.
- Madic's 1984 revenue reached \$15 million, a 50% increase over 1983 revenue of \$10 million.
- As of December 30, 1984, the company had 130 employees. There are currently 120 employees, segmented as follows:

Sales	28
Marketing communications	4
Engineering	40
Customer support	26
Computer operations	6
General and administrative	<u>16</u>
	120
- Major competitors for manufacturing turnkey systems include ASK Computer Systems, NCA Corporation, and Xerox Computer Systems. Manufacturing software competition comes from Cullinet Software and IBM.

*Replaces Company Profile on Industry Data Services, Inc.

MADIC CORPORATION

KEY PRODUCTS AND SERVICES

- Madic Corporation's 1984 revenue was derived from the MADIC® System that is available either as a turnkey system, software product, or remote computing service. Madic estimates that 1984 revenue was derived as follows:

Turnkey systems	60%
Software products	28
Remote computing	8
Other (i.e., education and training)	<u>4</u>
	100%

- The MADIC System is marketed to customers in discrete, process, job shop, repetitive, and diversified multi-plant manufacturing. Manufacturing customers range in company size from \$5 million a year to \$1 billion plus.
 - The MADIC software runs under the PICK® and VM® operating system on a variety of computers, including the Prime 50 series superminicomputers and IBM 4300 mainframes. Software only pricing starts at \$50,000. Over 125 software and turnkey systems have been installed in the U.S. and Canada.
 - The system provides data base management, reporting, and accounting controls. It will also support Federal Drug Administration lot control and government reporting functions. MADIC consists of 22 modules that can be purchased and installed as a complete system or on a modular basis. Modules include the following:
 - Accounts Payable.
 - Accounts Receivable.
 - Bills of Material.
 - Configuration Control.
 - Corporate Planning.
 - Cost Accounting.
 - Field Service.
 - General Ledger.
 - General System.
 - Inventory.
 - Marketing.
 - MRP/Master Scheduling.
 - Payroll.
 - Personnel.
 - Plant Maintenance.
 - Project Control.
 - Purchasing.
 - Quality Assurance.
 - Work in Progress.

MADIC CORPORATION

- . Fixed Assets.
- . Contract Administration.
- Madic also provides the system to approximately 30 remote computing customers.
 - . The timesharing service generates approximately \$103,000 per month.
 - . Users are typically new clients testing MADIC software capabilities prior to purchasing a system.

INDUSTRY MARKETS

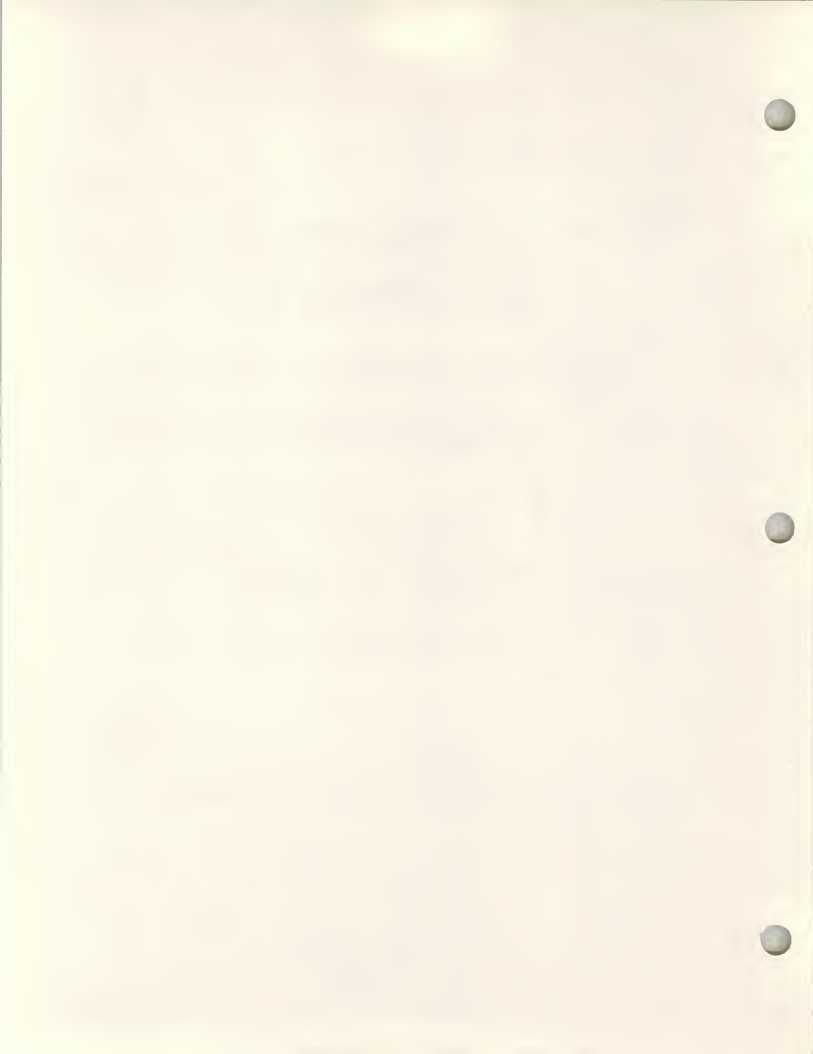
- Madic's 1984 revenue was derived from customers in the discrete and process manufacturing industries, ranging in size from small start-up companies to Fortune 500 firms.
- The company estimates that the major portion of 1985 revenue will be derived from sales to discrete and repetitive manufacturing companies with \$5 million to \$100 million in annual revenue.

GEOGRAPHIC MARKETS

- One hundred percent of Madic's 1984 revenue was derived from U.S. customers.
- Branch offices are located in Boston, Chicago, Dallas, Parsippany (NJ), and Anaheim, Emeryville, Santa Clara, and Woodland Hills (CA).

COMPUTER HARDWARE AND SOFTWARE

- Madic has the following equipment installed at its Santa Clara headquarters:
 - 2 Prime 9950s.
 - 1 Prime 750.
 - 1 Prime 2250.
 - 1 IBM 4361-S.
- The Anaheim, Woodland Hills, and Boston branches each maintain a Prime 450. The New Jersey branch has a Prime 2550 installed.
- Customers can access Madic's network via dial-up and leased lines.



COMPANY HIGHLIGHT

MANAGEMENT AND COMPUTER SERVICES, INC.
("MACS")
790 Valley Forge Plaza
Valley Forge, Pennsylvania 19482
(215) 265-2910

F. A. "Mick" Schlegel, Jr., President
Private corporation owned by
officers and employees
Computer services employees: 90
Total company sales, fiscal year
end 7/76: \$2,750,000

OVERALL ASSESSMENT AND TRENDS:

- Since its founding in 1966 by Mick Schlegel and Vice-President Howard Ferguson, MACS has had first hand experience in serving the batch and on-line processing services, facilities management, software products and consulting segments of the computer services industry. Viewing this mix as too broad based for the future, MACS management is now engaged in narrowing the company's focus toward software products and industry-oriented processing services and away from facilities management and general services.
- MACS goal is to grow the company faster (i.e., obtain a 36% increase in revenues by 1978 as compared to a 10% increase over the past two years) and to obtain a services mix by 1978 of 50% software products, 20% contract programming, 15% processing services and 15% facilities management.
- MACS sees the mini market as a significant opportunity and plans to orient its secondary school software towards mini computers, selling it initially as a service and eventually as a turnkey system.
- MACS is in a good position to expand its IBM DOS, OS, VS software products activities due to its large, diversified customer base and its willingness to invest in new products, such as SYSTEMACS. (SYSTEMACS is a newly announced proprietary methodology and software product designed to improve applications development productivity via improved procedures and automatic code generation from analyst-produced high level logic statements.)
- MACS specialization strategy appears well-founded in view of both their unique strengths and the general trends of the computer services marketplace. MACS recognizes that what they choose not to be in the future will be as important as their decisions on what to do and how.

COMPANY HIGHLIGHT/MANAGEMENT AND COMPUTER SERVICES, INC.

KEY PRODUCTS AND SERVICES:

- Twenty-eight percent of MACS business is processing services and 27% is facilities management. Proprietary software products account for 25% of revenues and consulting services are 20%.
- Best selling software products, all of which run under DOS, DOS/VS, OS and VS, unless otherwise indicated, are:
 - DATAMACS: A test data generator. Since 1969, 350 have been sold. Price per copy ranges from \$6,500 to \$8,500.
 - PULMACS: A source program library system. Over 75 units have been sold. Priced from \$2,500 to \$3,100.
 - INFOMACS: A file stripper and report writer with 50 users and a \$2,800 price tag.
 - CROSSMACS: A COBOL cross reference tool for IBM OS and VS users. Thirty units have been sold. Current price is \$995.
- Consulting activities primarily involve contract programming in support of MACS services and products.

APPLICATIONS: MACS has proprietary applications software for secondary schools and for utilities. The school applications include grading, attendance, scheduling, financial analysis, and state reporting, while the utility applications focus on billing, receivables, centralized cash collection, and financial consolidations.

INDUSTRY MARKETS:

- Twenty-four percent of MACS revenues are derived from processing services to secondary school districts in the Philadelphia area.
- An additional 24% of revenues is obtained from data collection, RJE, and processing services to utilities. One utility customer has 46 sites across the nation all of which feed data into MACS computers at Paoli, PA.
- The remaining 52% of revenues is cross industry.

COMPANY HIGHLIGHT/MANAGEMENT AND COMPUTER SERVICES, INC.

GEOGRAPHIC MARKETS:

- MACS has a data center located in Center City, Philadelphia, which provides batch and RJE processing services, including facilities management, to commercial firms and utilities.
- A second data center is located in Paoli, Pennsylvania (a suburb of Philadelphia). Processing services are provided primarily to secondary school districts and municipalities, with emphasis on on-line services such as conversational timesharing, financial analysis, forecasting, student instruction, and text editing.
- MACS software products and contract programming services are sold to the national marketplace from their Valley Forge headquarters. International software products are handled by independent representatives in six foreign countries, while Canada is sold directly by MACS.

COMPUTER HARDWARE AND SOFTWARE: MACS has an IBM 360/50, DOS, operating at their Center City, Philadelphia location; a Honeywell 1015, Mod 1 and a Honeywell 1646 at their Paoli site.



COMPANY PROFILE

MANAGEMENT REPORTS

INCORPORATED
23945 Mercantile Road
Cleveland, OH 44122
(216) 464-3225

Sidney R. Goodman, President
Private Corporation
Total Employees: 162
Total Revenue, Fiscal Year End
10/31/84: \$8,930,000
Computer Services Revenue:
\$8,730,000

THE COMPANY

- Management Reports Incorporated (MRI) was founded in 1971 to provide processing services for real estate development and property management firms. The company currently offers processing services, microcomputer software products, and laser printing services to these firms. In addition, the company is a licensed value-added remarketer and maintenance provider for the IBM Personal Computer.
- Fiscal 1984 revenue reached \$8.9 million, a 33% increase over fiscal 1983 revenue of \$6.7 million. Net income rose 9% from \$294,000 to \$320,000.
 - MRI's average annual growth rate from 1971 to 1984 was 36%. The company anticipates that fiscal 1985 revenue will reach \$11.3 million, a 33% revenue increase from 1984. MRI expects a similar level of growth to continue through 1987.
 - MRI expects 16% of fiscal 1985 revenue to be derived from the re-selling of IBM Personal Computers.
- In June 1984 MRI acquired Real Estate Computer Systems for an undisclosed sum of cash. Real Estate Computer Systems provides payroll and job costing software for TI minicomputers.
- As of October 31, 1984, MRI had 162 employees. These employees are segmented as follows:

Marketing/sales	32
Software services/customer support	25
Computer operations	78
General and administrative	<u>27</u>
	162

- The company's staff has doubled since 1983, when there were 80 employees.

- Management Reports' competitors in real estate property management computer services include ADP, Informatics, The Analytical Science Company, Tenman, and Timberline Systems.

KEY PRODUCTS AND SERVICES

- Ninety-eight percent of MRI's fiscal 1984 revenue came from computer services. The remaining 2% of this revenue was derived from IBM PC sales.

- Most of the company's revenue to date has been derived from providing processing services to real estate development and investment firms and syndicates. Fiscal 1984 computer services revenue of \$8.7 million was segmented as follows:

Processing services	95.1%
Software products	0.3
Laser printing services	<u>4.6</u>
	100.0%

- MRI's management estimates that roughly 40% of 1984 processing services revenue was derived from remote computing services and that 60% was derived from batch processing services. Of the remote computing revenues for 1984, the company estimates that 80% was derived interactively and that 20% was derived via remote batch processing.
- The company expects this mix to change dramatically in fiscal 1985. MRI management estimates that 82% of its revenue will be derived from processing services, 14% from software products, and 4% from laser printing services. The company believes that most of the change in the contribution of software products sales to revenue will be due to revenue generated by several vertical market products that they have recently developed for the IBM PC.
- The company maintains (on its NAS 8040 mainframe) proprietary software that handles a number of data processing and analysis functions of commercial and residential real estate property management firms and corporate tenants. (The company does not lease the mainframe version of this software but has converted some of the system's capability to the IBM PC.)
- For the property management client, MRI offers The On-Line Property Management System (The On-Line System), which is used by over 400 residential and commercial property management corporations. The On-Line System offers the following functions:
 - General ledger.
 - Lease management.
 - Accounts receivable and billing (Invoice System).

- For the residential property management company that does its collections on the property site, The Pegboard System is used for remote site data entry. The Pegboard System is patented by MRI and has been approved by the Department of Housing and Urban Development for residential property management accounting.
- In addition, the following modules are available on a per-access basis for residential or commercial management applications:
 - The Traffic Reporter is used to generate statistics on the productivity of various real estate lessee lead sources such as newspapers, phone calls, yellow pages, and referrals.
 - The S.T.A.R. (Store-Track-Anticipate-Retrieve) System is an electronic tickler system that identifies important dates pertaining to events that require timely attention. It might include, for example:
 - Lease renewal dates.
 - Employee reviews.
 - Service contract expiration dates.
 - Insurance premium expiration dates.
 - The Financial Modeling System (FMS) is an analysis system that works with The On-Line System to calculate projected income, allowing for variables such as mid-term capital investments or depreciation; or it can be used for pro forma forecasting using first-year information with user-assumed escalation factors.
 - "Graphics" is a graphics module for The On-Line System.
- MRI uses the Telenet network for connecting its clients' Hewlett-Packard 2621 dumb terminals or IBM PCs to The On-Line System. The company also leases and sells HP terminals and IBM PCs.
- Management Reports' S.T.O.R.E. (System to Oversee Real Estate), for the corporate tenant, performs sales analysis and lease reporting to assist the tenant in monitoring multiple-site operations and their leases.
- MRI also provides software products for the IBM PC.
 - The company aims to be the sole distributor for all of its clients' computing needs and thus offers, in addition to the property management software described below, many commercially available software packages for the PC. Each package is available for the IBM PC, XT, and AT running under PC-DOS 3.0.
 - The On-Site Commercial Property Management System (The On-Site System) is an IBM PC version of MRI's mainframe software. The software is leased to the user under "sole source" obligations requiring

the customer to promise to purchase maintenance, supplies, and future hardware and software from Management Reports. Three levels of functional capability are offered:

- Option A offers software license and manuals for \$151 that are billed as "free" for the beginning user to manage up to 10 properties and 100 tenants.
- Option B is the same as Option A except that it costs \$750 and allows the user to process up to 20 properties and 200 tenants.
- Option C offers software license and manuals for \$1,750 that allows the user to process any number of properties or tenants.
- The On-Site System offers much of the capability of the On-Line System (such as general ledger, accounts receivable, and billing) but lacks other capabilities that are available only through the On-Line System. For instance, the PC system doesn't have graphics or financial modeling capabilities, but it will track lead sources like The Traffic Reporter.
- Other standalone PC software packages that MRI sells are:
 - THE PROSPECTOR, a lease tracking system that sells for \$1,500 each.
 - R/E THINK II, a financial management package that sells for \$1,500 each.
 - Entrac-PC, an energy consumption analysis system used by real estate management companies to monitor the use of gas and electricity by tenants. The system allows for seasonal weighing of annual average use calculations. MRI has a distribution agreement with Clark & Slater Inc., the product's copyrighter. Entrac-PC sells for \$900 per copy.
- The company also markets the following products for Texas Instruments minicomputers. MRI acquired Real Estate Computer Systems, the company that developed these systems in June 1984. Both packages run on Texas Instruments minicomputers.
 - PAYROLL is a payroll package specifically designed for use by real estate agencies. The price is \$2,000.
 - JOB COST allows real estate development companies to monitor the cost of development projects. The price is \$2,000.

INDUSTRY MARKETS

- MRI derives 95.5% of its revenue from sales to real estate property management companies, investment firms and syndicates, and corporate clients who manage multiple leases as tenants. The remaining 4.5% is derived from laser printing services offered to anyone requiring these services.
- MRI's syndicated real estate development clients include such firms as JMB Income Properties Ltd.-VIII (Chicago, IL) and Reef Development of HI Inc. (Wahiawa, HI).

GEOGRAPHIC MARKETS

- INPUT estimates from discussions with the company that MRI's revenue is segmented geographically as follows:

New England	9%
Middle Atlantic	15
East North Central	30
South Atlantic	2
West South Central	20
Mountain	3
Pacific	<u>20</u>
	99%

- Less than 1% of the company's revenue comes from Canada.
- MRI has 14 offices located in the following U.S. cities: Boston (MA); Washington (DC); Chicago (IL); Houston, Dallas, and San Antonio (TX); Denver (CO); Phoenix (AZ); Laguna Hills, Los Angeles, and San Francisco (CA); New York (NY); Cleveland (OH); and Atlanta (GA).
- The company also has an office in Canada located in Vancouver, British Columbia.
- The company expects to open two new offices in 1985. The new locations have not yet been determined, but likely locations, as indicated by MRI, are Memphis (TN) and either Fort Lauderdale or Miami (FL).

COMPUTER HARDWARE

- The company owns and operates the following hardware:
 - 1 NAS 8040 mainframe.
 - 3 Xerox 9700 laser printers.
- Clients access MRI's data center via Telenet.



COMPANY PROFILE

MANAGEMENT SCIENCE AMERICA, INC.

3445 Peachtree Road, N.E.
Atlanta, GA 30326-1276
(404) 239-2000

John P. Imlay, Jr., Chairman, President,
and CEO
Public Corporation, OTC
Total Employees: 2,369 (12/88)
Total Revenue, Fiscal Year End
12/31/88: \$250,009,000

The Company

Management Science America, Inc. (MSA), founded in 1963, develops, markets, and supports a range of application software packages primarily for use on medium- to large-scale mainframes. These packages include financial and human resources products for cross-industry applications, as well as functionally specific applications for manufacturers, financial institutions, government organizations, health care providers, educational institutions, distributors, and insurance firms.

During the third quarter of 1988, in order to improve operating efficiency and profitability, MSA elected to recast its operations and reposition itself in the software industry.

- As part of this recasting decision, MSA committed to make its products compliant with IBM's Systems Application Architecture (SAA) and consolidate the development of its mainframe manufacturing software into one product line.
- MSA also significantly reduced its staff level, closed certain offices, reorganized its operations, and wrote-off certain capitalized software that was no longer part of the company's strategic direction.
- As a result, MSA's 1988 financials include recasting charges of \$32.6 million representing write-offs of capitalized software, accruals for severance payments, office shut-down costs, and other liabilities.

In May 1989, MSA and IBM announced that IBM had made a 5% equity investment in MSA. Under the terms of the agreement, IBM purchased directly from MSA 882,060 shares of MSA common stock at \$11.50 per share for a total purchase price of \$10.14 million. MSA will use the proceeds of the transaction for general corporate purposes, including continued product development based on IBM's SAA.

MSA's 1988 revenue was \$250 million, a 3% decrease from 1987 revenue of \$258.5 million.

- Losses of \$33.6 million for 1988 include \$32.6 million in recasting charges as previously described.
- During 1987, MSA changed its method of accounting for revenue to recognize software license fees upon delivery of software to customers instead of the former practice of recognizing a substantial portion of the fees upon contract execution.
 - As a result, net losses of nearly \$71 million for 1987 include a charge of approximately \$70.2 million for cumulative effect on prior years of changes in accounting for revenue recognition and income taxes.
 - Although financials prior to 1987 have not been restated, on a pro forma basis (assuming the change in revenue recognition methods was applied retroactively), net losses for 1987 would have been \$726,000.
- A five-year financial summary follows:

**MANAGEMENT SCIENCE AMERICA, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)**

ITEM	FISCAL YEAR				
	1988	1987	1986	1985	1984
Revenue	\$250,009	\$258,543	\$193,449	\$151,661	\$141,816
• Percent increase (decrease) from previous year	(3%)	(a) 34%	28%	7%	21%
Income (loss) before taxes extraordinary items	\$(33,559)	\$948	\$36,142	\$10,544	\$25,393
• Percent increase (decrease) from previous year	*	(97%)	243%	(58%)	30%
Net income (loss)	\$(33,559)	\$(70,959)	\$18,741	\$6,860	\$243
• Percent increase (decrease) from previous year	*	*	173%	*	(98%)
Earnings (loss) per share	\$(2.02)	\$(4.11)	\$1.03	\$0.39	\$0.01
• Percent increase (decrease) from previous year	*	*	(98%)	2%	51%
Pro forma amounts (d)					
• Net income (loss)	--	\$726	\$13,193	\$3,665	\$(7,286)
• Earnings (loss) per share	--	\$(0.04)	\$0.73	\$0.21	\$(0.43)

* Percent change not meaningful.

(a) If pro forma amounts are used, 1987 revenue increased approximately 43% over 1986 pro forma revenue of \$180.8 million.

(b) Includes recasting charges of approximately \$32.6 million.

(c) Includes approximately \$71 million in charges from the cumulative effect on changes in accounting for revenue.

(d) Assumes the change in revenue recognition methods is applied retroactively.

MSA management attributes revenue declines during 1988 to a decline in deliveries of software and a change in the product mix of the items delivered. The change in the mix of revenues in 1988 resulted in part from a change in marketing strategy and price allocation to place greater emphasis on support services, thus increasing the service revenue portion of the initial software package contract compared with the license fee amount.

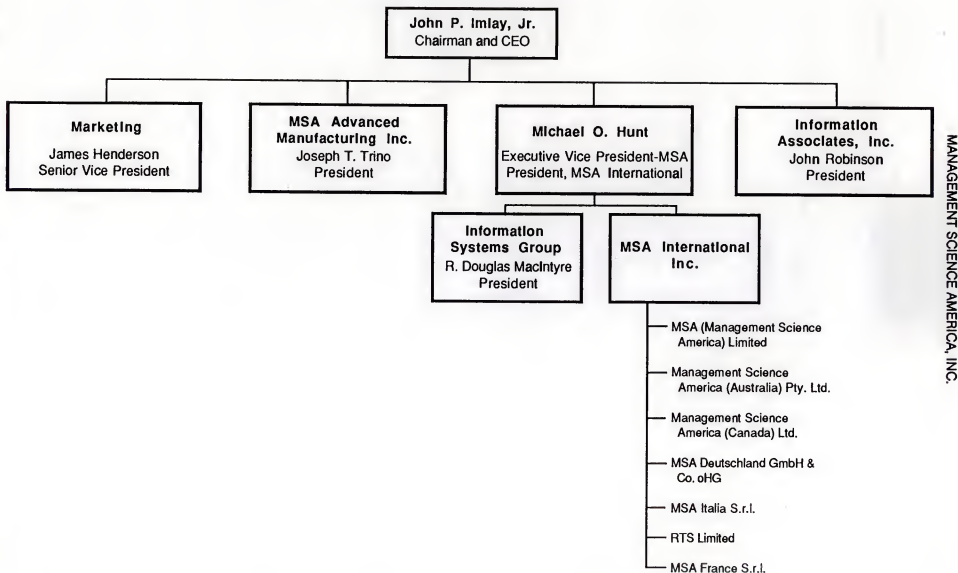
Revenue for the six months ending June 30, 1989 was \$130.4 million, compared to \$131.9 million for the same period in 1988. Net income was \$6.5 million, compared to net income of \$8.2 million for the first half of 1988.

MSA's current organization structure is shown in the exhibit. The company operates through the following units:

- MSA Advanced Manufacturing, Inc. (AMI), formed in 1987, combines the product line acquired with Comserv Corporation in 1986 and MSA's manufacturing products. AMI provides manufacturers with complete MRP II, financial, distribution, and human resource applications. AMI also offers a complete line of educational products including video instruction and training, as well as on-site consulting services.
- MSA Information Systems Group (ISG) markets and supports MSA software products to U.S. customers in banking, insurance, general business, government, utilities, health care, and the services industries. ISG also manages MSA's Market Alliance Program, which involves cooperative product development, support, and marketing with Honeywell Bull, NCR, and Unisys.
- Information Associates, Inc. (IA), headquartered in Rochester (NY), was acquired by MSA in 1986. IA provides application software to the higher education market.
- MSA International, Inc., markets and supports MSA's software products outside the U.S. International operations include:
 - Management Science America (Canada) Ltd., headquartered in Toronto
 - MSA (Management Science America) Limited, headquartered in Maidenhead, Berkshire (U.K.)
 - Management Science America (Australia) Pty. Ltd., in North Sydney
 - MSA Deutschland GmbH & Co. OHG, headquartered in Munich
 - MSA Italia S.r.l., headquartered in Milan
 - MSA France S.A., headquartered in Paris

EXHIBIT

MSA ORGANIZATION CHART



- RTS Limited, based in Dublin, provides AMAPS manufacturing and financial software products for IBM System 36 and 38 computers. RTS was acquired by MSA in 1986.

As of December 31, 1988, MSA had 2,369 employees. Of these, 1,902 were located in the U.S. and 467 were employed in other countries. The current number of employees is approximately the same.

Major competitors for MSA's financial management software include McCormack & Dodge (Dun & Bradstreet) and Computer Associates. Competition in the manufacturing software area comes from IBM and Martin Marietta Data Systems.

Key Products and Services

A three-year summary of source of revenue follows:

MANAGEMENT SCIENCE AMERICA, INC. THREE-YEAR SOURCE OF REVENUE SUMMARY (\$ millions)

ITEM	FISCAL YEAR					
	1988		1987		1986 (a)	
	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
Software package license fees	\$94.4	38%	\$126.0	49%	\$90.8	50%
Support services	153.6	61%	130.5	50%	88.9	49%
Other	2.0	1%	2.0	1%	1.1	1%
TOTAL	\$250.0	100%	\$258.5	100%	\$180.8	100%

(a) For comparative purposes, pro forma results have been used for 1986.

MSA has licensed over 24,500 of its products to more than 7,500 customers in 61 countries worldwide.

- Approximately 75% of the Fortune 500 companies use one or more of the company's packages.
- MSA offers cross-industry application products for IBM 370, 43XX, 30XX, 9370, System 36 and 38; Unisys 1100, 2200, V series, A series, 39XX, 39XX, 49XX, 59XX, and 7XXX;

Honeywell Bull DPS 8, DPS 88, DPS 90, and DPS 8000; and NCR 85XX, 86XX, 88XX, and 9800 series computers.

- Manufacturing applications are also provided for the HP 3000 and IBM 36/38 minicomputers, as well as IBM mainframes.
- Higher education administrative software is available for DEC VAX and MicroVAX systems, as well as IBM mainframes.
- MSA supports the major IBM operating environments and popular data base management systems such as IBM's DB2, IMS, and DL/I; Computer Associates' DATACOM/DB and IDMS/R; and Software AG's ADABAS.

MSA provides the Expert Series, a line of software products for financial, human resources, and manufacturing applications. Cross-industry products available include the following:

- Accounts Payable provides control of the disbursement process, from document matching, invoice entry, and approval, to payment processing and reconciliation.
- Accounts Receivable provides credit and collection management, interactive cash application facilities, and customer correspondence.
- ALLTAX[®] provides tax coverage by calculating payroll and withholding taxes for businesses in the U.S. and Canada.
- Budgetary Control manages the budgeting, accounting, and procurement process in government, education, and other public-sector environments.
- Distribution Resource Planning monitors inventories, customer service levels, and other resources to develop an integrated time-phased inventory plan that drives the purchasing scheduling process. The system supports economic ordering, safety stock management, inventory allocation, transportation planning, and performance reporting.
- Expert EDI is MSA's electronic data interchange product.
- Financial Controller provides validation, data interchange, and total information access to integrate all financial applications.

- Fixed Assets Accounting provides property control and tax accounting, including compliance with tax and regulatory changes.
- Forecasting and Modeling provides complete decision support for "what if?" analysis and planning through integration with the MSA General Ledger, Accounts Payable, Accounts Receivable, and Payroll/Personnel Systems, as well as with in-house systems.
- Foreign Exchange provides multicurrency processing through integration with MSA's General Ledger, Accounts Payable, and Accounts Receivable Systems, as well as in-house systems.
- General Ledger provides accounting and auditing functions, including realtime budgeting and planning facilities, cost-accounting functions, and management reporting.
- Health Care Decision Support provides a data base of clinical and financial information for case mix management, offers detail or summary-level cost determination of products or services for comprehensive product line costing, and provides productivity analysis for variances between actual and earned labor, material, and overhead costs. In addition, Patient Accounting from TDS Healthcare Systems Corporation is marketed by MSA to provide integrated financial and patient accounting.
- Payroll/Personnel meets internal, regulatory, accounting, and auditing requirements in producing payroll checks, labor distribution reports, salary reviews, manpower planning, and other human resource reports. The system fully supports recruiting, hiring, payment policies, taxing considerations, benefits administration, compensation administration, and employee relations.
- International Personnel and Payroll, marketed outside North America, provides a range of business applications required by the personnel, benefits, employee relations, payroll, and accounting departments.
- Inventory provides control of obtaining, storing, and issuing inventory. The system can help reduce the cost of inventory, ensure satisfactory stock levels, and streamline replenishment.
- Order Processing supports customer service by controlling order entry, shipment support and billing, and other order

management activities through easy-to-use, interactive, realtime facilities.

- Project Tracking monitors, controls, and reports on all kinds of major projects, from budget to completion.
- Purchasing provides on-line facilities that streamline the entire purchasing cycle, including processing requisitions, quotations, purchase orders, receipts, and inspections.
- Sales Forecasting supports the requirements of manufacturers, wholesalers, and retailers by providing decision support tools for structured management planning and forecast management. The system supports multilevel forecasts, group level adjustments, new product forecasts, and performance reporting.

Information Expert[®] is MSA's information management environment that integrates MSA applications with in-house-developed and other third-party systems. Since its introduction in 1985, Information Expert has been delivered to more than 3,000 customers. Information Expert components include the following:

- Expert Reporting[™] guides users through retrieval and reporting of information from multiple data bases and applications.
- ExpertLink[®] permits two-way communications between microcomputers and mainframes.
- Expert Query[™] provides natural language interfaces to allow users to interact with management information systems.
- Expert Screen Painting[™] provides end users with realtime screen building facilities.
- Expert Language is a fourth-generation language.
- Expert Data Dictionary allows users to integrate all their software under one centralized environment.

The BrightView[™] series of cooperative processing application software products, announced in November 1988, is designed specifically for MIS staff and application users. The products allow a portion of the information processing previously executed on the mainframe to be performed on an intelligent workstation.

SmartView[™], introduced in June 1989, is an executive information facility that is targeted to senior executives. This

facility will initially be available for MSA's General Ledger product in the fourth quarter of 1989. SmartView is a result of an agreement signed earlier this year between MSA and Comshare.

In addition to cross-industry software for financial management and human resources applications, MSA also offers versions of its products for specific industry markets, as follows:

Manufacturing:

MSA Advanced Manufacturing Inc., provides systems that support repetitive/just-in-time (JIT), process, and government contract manufacturing environments. This unit serves over 3,000 customers, including 75% of the Fortune 500.

- AMAPS/Q manufacturing system is marketed to repetitive/just-in-time discrete manufacturers and has capabilities to support process manufacturers. It is used in both single-plant and multiple-plant environments. It runs on IBM and compatible mainframes and is supported by all major data base environments, including DATACOM/DB, IDMS/R, and ADABAS, in addition to IBM's IMS, DL1, and future support of DB2. Modules include:
 - Bill of Materials
 - CADlink
 - Capacity Requirements Planning
 - Contract Engineering System
 - Cost Development System
 - Cost Management System
 - Lot Traceability System
 - Management Reporting System
 - Master Production Scheduling
 - Material Control System
 - Multiproduct Management System
 - Process and Routing System
 - Purchasing Control System
 - Schedule-Managed Production
 - Shop Floor Control
- The AMAPS/M manufacturing system for discrete and repetitive/just-in-time manufacturers is no longer actively marketed.
- AMAPS/3000 manufacturing system is marketed to manufacturers looking for an integrated manufacturing and financial application solution. It is used by repetitive/just-in-time, discrete, and process manufacturers in both single-plant

and multiple-plant environments. It runs on HP 3000 and Spectrum minicomputers. Modules include:

- Accounts Payable
 - Accounts Receivable
 - Bill of Materials
 - Capacity Requirements Planning
 - Cost Management
 - General Ledger
 - Lot Traceability
 - Master Production Scheduling
 - Material Control
 - Material Requirement Planning
 - Order Management
 - Process and Routing
 - Purchasing Control
 - Schedule-Managed Production
 - Shop Floor Control
 - Standard Costing
- AMAPS/36 and AMAPS/38 are marketed primarily to large-system customers with distributed environments, multinational manufacturers, and manufacturers migrating from a mainframe to minicomputer environment. The products run on IBM System 36 and 38 computers.
 - AMAPS/36 and AMAPS/38 Manufacturing Systems are software applications designed to meet production control requirements. System modules include Inventory Management, Material Requirements Planning, Purchasing, Order Processing, and Production Cost Management. The Manufacturing System is fully integrated with the AMAPS/36 and AMAPS/38 Financial System.
 - The MSA AMAPS/36 and AMAPS/38 Financial Systems provide cash and financial management with special features for consolidation, currency conversion, and intercompany reporting. The system also conforms to local, legal, fiscal, and language requirements throughout the world. The AMAPS/36 and AMAPS/38 Financial Systems consist of integrated accounting applications that are fully integrated with the AMAPS/36 and AMAPS/38 Manufacturing Systems. Modules include Accounts Payable, Accounts Receivable, Cash Controller, General Ledger, and Fixed Assets.
 - AMAPS/G manufacturing system is marketed to manufacturers who manufacture to contractors, primarily government

contractors. The system addresses the special reporting requirements of contract manufacturers. The system runs on IBM and compatible mainframes. Modules include:

- Costing System
 - Bill of Materials System
 - Capacity Requirements Planning
 - Contract Engineering System
 - Master Production Scheduling
 - Material Control System
 - Material Requirements Planning
 - Process and Routing System
 - Purchasing Control System
 - Shop Floor Control
- MSA's CIM Partners Program provides for the cooperative development of interfaces between MSA manufacturing products and products from other vendors. MSA currently has CIM Partners agreements with the following companies: Tandem Computers; Rexnord, Inc.; Infolink Corp.; Metro Controls; and Aion Corp.

Health Care:

MSA provides an integrated line of patient accounting and information systems for hospitals with 300 or more beds.

- MSA applications include Cost Accounting, Case Mix Management, General Ledger, Accounts Payable, Patient Accounting, Purchasing, Inventory, Fixed Assets, and Payroll/Personnel.
- There are currently over 200 health care customers.

Higher Education:

Through Information Associates, Inc. (IA), MSA markets the Series Z product line to colleges and universities.

- The products, which run on DEC and IBM mid-range systems, include Financial Records System, Student Information System, Human Resource System, and Alumni/Development System.
- There are currently over 450 customers worldwide.

Financial Services:

MSA provides integrated financial accounting software to over 750 banks, savings and loans, and insurance companies located in 30 countries. Clients use MSA products for property control, financial and tax accounting, depreciation forecasting, disbursement control, purchasing, personnel management, and payroll.

Government:

To serve the information management needs of city, county, state, and federal governments, MSA's products can be used individually or integrated into a complete system. Products include Budgetary Control, General Ledger, Accounts Payable, Accounts Receivable, EDI, Purchasing, Human Resources, Inventory, and Fixed Assets.

Logistics:

Integrated systems include Demand Management, for manufacturers with integrated distribution; Materials Management, for organizations that consume materials internally; and Distribution Management, for wholesalers/distributors, retailers, and manufacturers with separate distribution operations. Products include Accounts Payable, Accounts Receivable, EDI, Inventory, Distribution Resource Planning, Order Processing, Purchasing, and Sales Forecasting.

- MSA's Expert EDI product allows purchasing, order processing, accounts payable, and accounts receivable systems to communicate directly with customer and supplier systems.

MSA/vendor agreements include the following:

- MSA's Market Alliance Program manages the cooperative product, support, and development and marketing efforts between MSA and Honeywell Bull, NCR, and Unisys.

MSA offers the following customer support services:

- Consulting services include on-site implementation planning, project management, data conversion, system design, and general consulting. MSA can also customize its software to meet user-specific requirements.

- MSA offers its customers over 150 different education courses from major training centers worldwide. More than 100,000 students were trained in MSA systems during 1988.
- The company also offers the following computer-based services:
 - Expert Insight gives customers 24-hour access to MSA's Client Support Center in Atlanta through a PC-to-PC link and allows the customer to browse a data base of timely product information and system corrections.
 - Computer-Based Diagnostics provides a direct, interactive link between the customer's mainframe computer and the MSA Client Support Center. With this service, customers give MSA selective access to their relevant system files or programs.

Industry Markets

MSA's revenue is derived approximately as follows:

Manufacturing	45%
Banking and finance	14%
Government/education	12%
Distribution	6%
Commercial/transportation	5%
Medical	5%
Utilities	4%
Services	3%
Insurance	3%
Other	<u>3%</u>
	100%

More than three-fourths of the Fortune 500 companies use one or more of MSA's packages.

Geographic Markets

Approximately 76% of MSA's 1988 revenue was derived from North America and 24% from international sources. A three-year summary of source of revenue follows:

**MANAGEMENT SCIENCE AMERICA, INC.
THREE-YEAR SOURCE-OF-REVENUE SUMMARY
(\$ millions)**

	FISCAL YEAR					
	1988		1987		1986	
ITEM	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
North America	\$190.0	76%	\$208.6	81%	\$145.6	75%
Europe	43.6	18%	36.3	14%	34.1	18%
Other	15.5	6%	13.6	5%	13.7	7%
TOTAL	\$250.0	100%	\$258.5	100%	\$193.4	100%

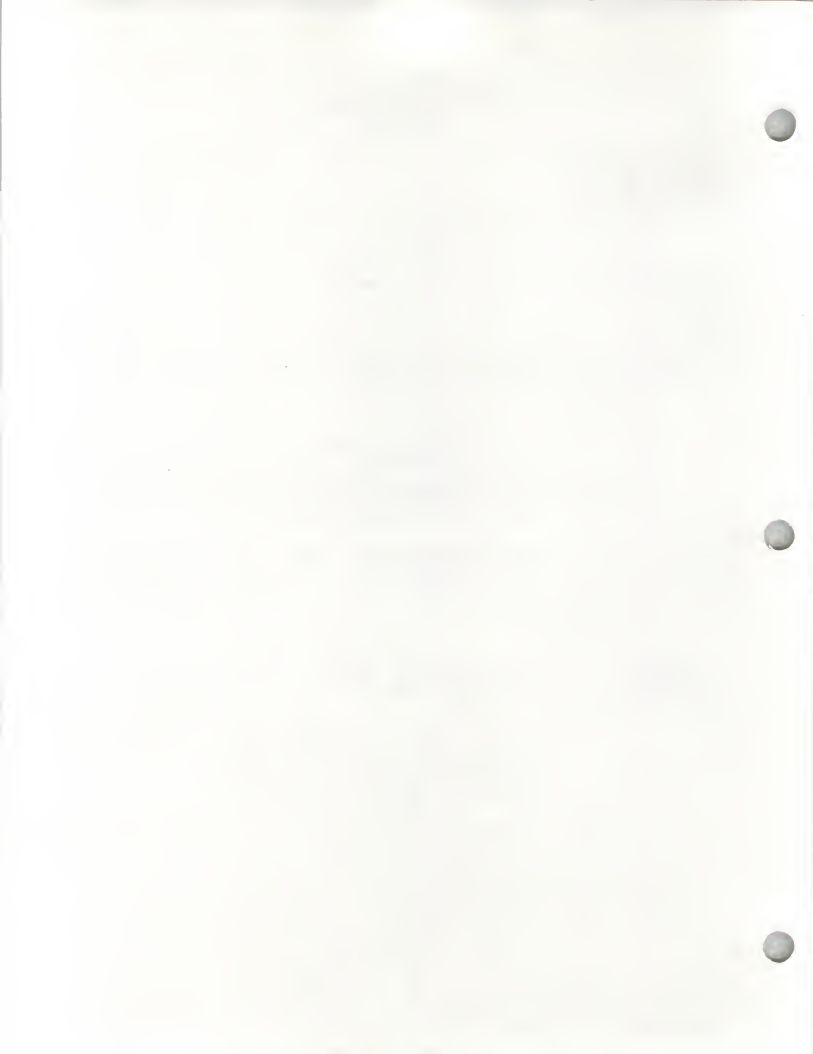
U.S. offices are located in Atlanta, Boston, Boulder, Chicago, Columbus, Dallas/Ft. Worth, Denver, Detroit, Houston, Los Angeles, Minneapolis/St. Paul, Nashville, New Haven, New York City, Omaha, Philadelphia, Phoenix, Rochester, San Diego, San Francisco, Seattle, Syracuse, and Washington, D.C.

Foreign offices are located in Canada, the U.K., Belgium, France, West Germany, Italy, Spain, Australia, and The Netherlands. MSA also has representatives in Brazil, Mexico, Peru, and Puerto Rico.

**Computer
Hardware and
Software**

MSA maintains various equipment at its Atlanta headquarters, including the following:

- 1 IBM 3090-400, operating under MVS/XA
- 1 IBM 3081-K32, operating under MVS/XA
- 1 IBM 4381-P14, operating under VM/DOS VSE
- 1 IBM 4381-Q24, operating under MVS/XA



COMPANY PROFILE

MANAGEMENT SCIENCE AMERICA, INC.
3445 Peachtree Road, N.E.
Atlanta, GA 30326-1276
(404) 239-2000

John P. Imlay, Jr., Chairman and CEO
William M. Graves, President
Public Corporation, OTC
Total Employees: 2,641 (12/86)
Total Revenue, Fiscal Year End
12/31/86: \$193,449,000

THE COMPANY

- Management Science America, Inc. (MSA), founded in 1963, develops, markets, and supports a range of application software packages for use on medium- to large-scale mainframes. These include logistics, financial, and human resources products for cross-industry applications, as well as functionally specific applications for manufacturers, financial institutions, government organizations, health care providers, educational institutions, distributors, and insurance firms. In addition, the company offers a fourth-generation technology called Information Expert® that provides end users a facility to access and combine information from multiple applications and data bases for reporting, performing on-line queries, and designing screens.
- MSA's 1986 revenue was \$193.4 million, a 28% increase over 1985 revenue of \$151.7 million. Net income rose 173% from \$6.9 million in 1985 to \$18.7 million in 1986. A five-year financial summary follows:

MANAGEMENT SCIENCE AMERICA, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)

FISCAL YEAR ITEM	1986	1985	1984	1983	1982
Revenue	\$ 193,449	\$ 151,661	\$ 141,816	\$ 117,364	\$ 87,742
• Percent increase from previous year	28%	7%	21%	34%	30%
Income before taxes and extraordinary item (a)	\$ 36,142	\$ 10,544	\$ 25,393	\$ 19,490	\$ 14,697
• Percent increase (decrease) from previous year	243%	(58%)	30%	33%	43%
(Loss) from discontinued operations	-	-	\$ (7,503)	\$ (203)	\$ (103)
(Loss on disposal of discontinued operations	-	-	\$ (5,952)	-	-
Net income	\$ 18,741	\$ 6,860	\$ 243	\$ 10,769	\$ 8,955
• Percent increase (decrease) from previous year	173%	(b)	(98%)	20%	63%
Earnings per share from continuing operations	\$ 1.03	\$ 0.39	\$ 0.77	\$ 0.64	\$ 0.63
Net earnings per share	\$ 1.03	\$ 0.39	\$ 0.01	\$ 0.63	\$ 0.62
• Percent increase (decrease) from previous year	164%	(b)	(98%)	2%	51%

(a) Amounts for 1984, 1983, and 1982 have been restated to reflect continuing operations. In the fourth quarter of 1984, MSA adopted a plan to dispose of its retail microcomputer software division. By the end of the first six months of 1985, the company had sold these operations for \$2.5 million in cash and notes.

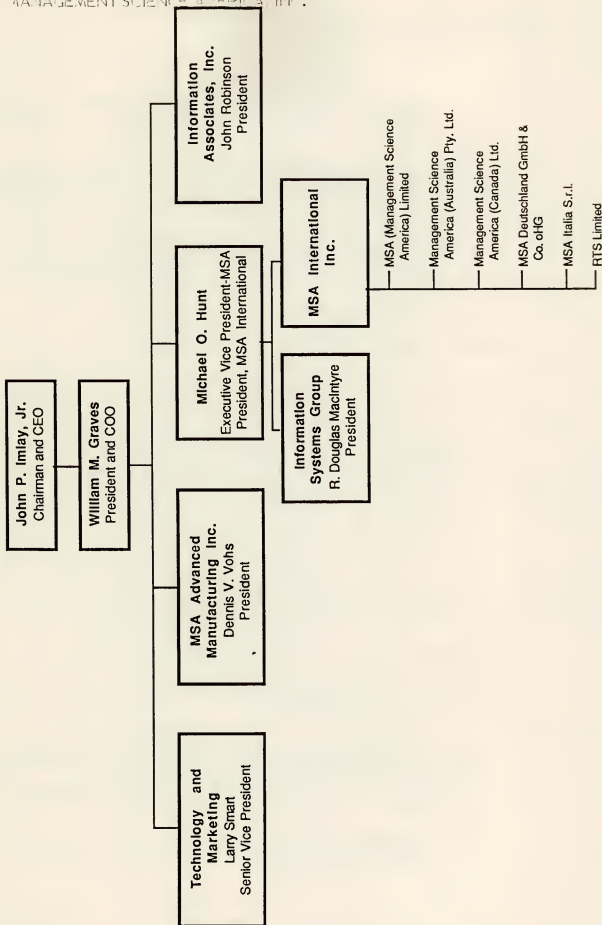
(b) Percent change exceeds 1,000%.

- MSA management attributes 1986 results to the acceptance of MSA's integrated on-line systems, the continued success of Information Expert technology, the introduction of new products for the distribution and materials management markets, and a 54% growth in international revenue.
- During 1986, MSA made three acquisitions, all accounted for as purchases. The results of their operations (accounting for 7% of MSA's total revenue) have been included in 1986 financials from their respective dates of acquisition.
 - In December 1986, MSA acquired 63% of Comserv Corporation for \$8.3 million in cash to Comserv and \$1.5 million for Control Data Corporation's interest in Comserv.
 - In February 1987, MSA acquired the remaining 37% of Comserv's outstanding stock for \$7.1 million.
 - Comserv, with 1985 revenue of approximately \$29.5 million, provides manufacturing resource planning (MRP II) software products, including the AMAPS product line.
 - The operations of Comserv and MSA Manufacturing have been merged into MSA Advanced Manufacturing Inc., a wholly owned subsidiary of MSA.
 - In August 1986, MSA acquired Information Associates, Inc. (IA) for \$15 million in cash and notes.
 - IA provides application software products to the higher education market and has more than 400 customers worldwide.
 - IA, with revenue of approximately \$16 million and pre-tax income over \$1 million in 1985, had 250 employees at the time of the acquisition.
 - IA now operates as a wholly owned subsidiary of MSA.
 - In June 1986, MSA acquired RTS Limited for approximately \$1 million in cash.
 - Based in Dublin, Ireland, RTS develops, markets, and supports manufacturing and financial software products for IBM System 36 and System 38 computers. The products are available in English and six other languages.
 - RTS had 1985 revenue of over \$4.0 million. The company had licensed more than 1,500 products to approximately 300 customers in 20 countries at the time of the acquisition.
 - RTS now operates as a wholly owned subsidiary of MSA.

- Revenue for the six months ending June 30, 1987, reached \$106.7 million, a 39% increase over \$77 million for the same period in 1986. Net losses were \$6.2 million, compared to net income of \$5.5 million for the first half of 1986.
 - MSA management states that the company's recent acquisitions added significantly to operating costs and to the net loss for the first half of 1987.
 - Management now expects that RTS, its Ireland subsidiary, will have higher than anticipated losses for the year.
 - Several factors, including the RTS loss, may reduce the company's earnings potential for the second half of the year.
- MSA's current organization structure is shown in the exhibit. The company operates through the following units:
 - MSA Advanced Manufacturing, Inc. (AMI) combines the operations of MSA's manufacturing product line together with the Conserv product lines to provide manufacturers complete MRP II, financial, distribution, and human resource applications. AMI also offers a complete line of educational products including video instruction and training, as well as on-site consulting services.
 - MSA Information Systems Group (ISG) markets and supports MSA software products to U.S. customers in banking, insurance, general business, government, utilities, health care, and the services industries. ISG also manages MSA's Market Alliance Program which involves cooperative product development, support, and marketing with Honeywell Bull, NCR, and Unisys.
 - Information Associates, Inc., provides application software to the higher education market.
 - MSA International, Inc., markets and supports MSA's software products outside the U.S. International operations include the following:
 - Management Science America (Canada) Ltd., headquartered in Toronto.
 - MSA (Management Science America) Limited, headquartered in Maidenhead, Berkshire (U.K.).
 - Management Science America (Australia) Pty. Ltd., in North Sydney.
 - MSA Deutschland GmbH & Co. oHG, headquartered in Munich.
 - MSA Italia S.r.l., headquartered in Milan.

MSA ORGANIZATION CHART

EXHIBIT



- RTS Limited, based in Dublin, provides AMAPS manufacturing and financial software products for IBM System 36 and 38 computers.
- As of December 31, 1986, MSA had 2,641 employees (including 263 Conserv employees). Of these, 2,102 were located in the U.S. and 539 were employed in other countries. The company currently has more than 2,800 employees.
- Major competitors for MSA's financial management software include McCormack & Dodge (Dun & Bradstreet) and Computer Associates. Competition in the manufacturing software area comes from Cullinet, IBM, and Martin Marietta Data Systems.

KEY PRODUCTS AND SERVICES

- A three-year summary of source of revenue follows (\$ millions):

FISCAL YEAR ITEM	1986		1985		1984	
	Revenue	Percent of Total	Revenue	Percent of Total	Revenue	Percent of Total
Software package license fees	\$120.6	62%	\$87.8	58%	\$93.3	66%
Support services	71.7	37	62.8	41	47.6	34
Other	1.1	1	1.1	1	0.9	-
Total	\$193.4	100%	\$151.7	100%	\$141.8	100%

- MSA has licensed over 20,000 of its products to more than 7,000 customers worldwide.
 - Approximately 375 of the Fortune 500 companies use one or more of the company's packages.
 - MSA offers cross-industry application products for IBM 370, 43XX, 30XX, 9370, System 36 and 38; Unisys 1100, 2200, V series, A series, 29XX, 39XX, 49XX, 59XX, and 7XXX; Honeywell Bull DPS 8, DPS 88, DPS 90, and DPS 8000; and NCR 85XX, 86XX, 88XX, and 9800 series computers.
 - Manufacturing applications are also provided for the HP 3000 and IBM 36/38 minicomputers, as well as IBM mainframes.

- Higher education administrative software is available for DEC VAX and MicroVAX systems, as well as IBM mainframes.
- MSA supports the major IBM operating environments and popular database management systems such as IBM's DB2, IMS, and DL/I; Applied Data Research's DATACOM/DB; Cullinet's IDMS/R; and Software AG's ADABAS.
- MSA provides the Expert Series, a line of software products for financial, human resources, and manufacturing applications. Cross-industry products available include the following:
 - Accounts Payable provides control of the disbursement process—from document matching, invoice entry, and approval, to payment processing and reconciliation.
 - Accounts Receivable provides credit and collection management, interactive cash application facilities, and customer correspondence.
 - ALLTAX® provides tax coverage by calculating payroll and withholding taxes for businesses in the U.S. and Canada.
 - Budgetary Control manages the budgeting, accounting, and procurement process in government, education, and other public sector environments.
 - Distribution Resource Planning monitors inventories, customer service levels, and other resources to develop an integrated time-phased inventory plan that drives the purchasing scheduling process. The system supports economic ordering, safety stock management, inventory allocation, transportation planning, and performance reporting.
 - Expert EDI is MSA's electronic data interchange product.
 - Financial Controller provides validation, data interchange, and total information access to integrate all financial applications.
 - Fixed Assets Accounting provides property control and tax accounting, including compliance with tax and regulatory changes.
 - Forecasting and Modeling provides complete decision support for "what if?" analysis and planning through integration with the MSA General Ledger, Accounts Payable, Accounts Receivable, and Payroll/Personnel Systems, as well as with in-house systems.
 - Foreign Exchange provides multicurrency processing through integration with MSA's General Ledger, Accounts Payable, and Accounts Receivable Systems, as well as in-house systems.

- General Ledger provides accounting and auditing functions, including realtime budgeting and planning facilities, cost accounting functions, and management reporting.
- Health Care Decision Support provides a data base of clinical and financial information for case mix management, offers detail or summary-level cost determination of products or services for comprehensive product line costing, and provides productivity analysis for variances between actual and earned labor, material, and overhead costs. In addition, Patient Accounting from TDS Healthcare Systems Corporation is marketed by MSA to provide integrated financial and patient accounting.
- International Personnel and Payroll provides a range of business applications required by the personnel, benefits, employee relations, payroll, and accounting departments.
- Inventory provides control of obtaining, storing, and issuing inventory. The system can help reduce the cost of inventory, ensure satisfactory stock levels, and streamline replenishment.
- Order Processing supports customer service by controlling order entry, shipment support and billing, and other order management activities through easy-to-use, interactive, realtime facilities.
- Payroll/Personnel meets internal, regulatory, accounting, and auditing requirements in producing payroll checks, labor distribution reports, salary reviews, manpower planning, and other human resource reports. The system fully supports recruiting, hiring, payment policies, taxing considerations, benefits administration, compensation administration, and employee relations.
- Project Tracking monitors, controls, and reports on all kinds of major projects from budget to completion.
- Purchasing provides on-line facilities that streamline the entire purchasing cycle, including processing requisitions, quotations, purchase orders, receipts, and inspections.
- Sales Forecasting supports the requirements of manufacturers, wholesalers, and retailers by providing a decision support tool for structured management planning and forecast management. The system supports multi-level forecasts, group level adjustments, new product forecasts, and performance reporting.
- Information Expert[®] is MSA's information management environment that integrates MSA applications with in-house developed and other third-party systems. Information Expert components include the following:

- Expert Reporting^{T.M.} guides users through retrieval and reporting of information from multiple data bases and applications.
- ExpertLink[®] permits two-way communications between microcomputers and mainframes.
- Expert Query^{T.M.} provides natural language interfaces to allow users to interact with management information systems.
- Expert Screen Painting^{T.M.} provides end users with realtime screen building facilities.
- Expert Language, a fourth-generation language.
- Expert Data Dictionary allows users to integrate all their software under one centralized environment.
- In addition to cross-industry software for financial management and human resources applications, MSA also offers versions of its products for specific industry markets, as follows:
 - Manufacturing. MSA Advanced Manufacturing Inc., provides systems that support repetitive/just-in-time (JIT), process, and government contract manufacturing environments. This unit, with 1986 revenue approaching \$100 million, serves over 3,000 customers, including 75% of the Fortune 500.
 - AMAPS/Q manufacturing system is marketed to repetitive/just-in-time discrete manufacturers and has capabilities to support process manufacturers. It is used in both single plant and multiple plant environments. It runs on IBM and compatible mainframes and is supported by all major data base environments including DATACOM/DB, IDMS/R, ADABAS, in addition to IBM's IMS, DLI, and future support of DB2. Modules include:
 - Bill of Material System.
 - CADlink.
 - Capacity Requirements Planning.
 - Contract Engineering System.
 - Cost Development System.
 - Cost Management System.
 - Lot Traceability System.
 - Management Reporting System.
 - Master Production Scheduling.
 - Material Control System.
 - Material Requirements Planning.
 - Multi-Product Management System.
 - Process and Routing System.
 - Purchasing Control System.
 - Schedule Managed Production.
 - Shop Floor Control.

- AMAPS/M manufacturing system is marketed to discrete and repetitive/just-in-time manufacturers. It is used by manufacturers in both single plant and multiple plant environments. It runs on IBM and compatible mainframes and is supported by the major data base managers, including DATACOM/DB, IDMS/R, in addition to IBM's IMS, DLI, and future support of DB2. Modules include:
 - Advanced Inventory Management.
 - Capacity Requirements Planning.
 - Distribution Resource Planning.
 - Inventory Control.
 - Manufacturing Accounting.
 - Manufacturing Standards.
 - Master Production Scheduling.
 - Material Requirements Planning.
 - Order Processing.
 - Product Costing.
 - Purchasing.
 - Sales Forecasting.
 - Shop Floor Control.
- AMAPS/3000 manufacturing system is marketed to manufacturers looking for an integrated manufacturing and financial application solution. It is used by repetitive/just-in-time, discrete, and process manufacturers in both single plant and multiple plant environments. It runs on HP 3000 and Spectrum minicomputers. Modules include:
 - Accounts Payable.
 - Accounts Receivable.
 - Bill of Material.
 - Capacity Requirements Planning.
 - Cost Management.
 - General Ledger.
 - Lot Traceability.
 - Master Production Scheduling.
 - Material Control.
 - Material Requirement Planning.
 - Order Management.
 - Process and Routing.
 - Purchasing Control.
 - Schedule Managed Production.
 - Shop Floor Control.
 - Standard Costing.
- AMAPS/36 and AMAPS/38 are marketed primarily to large system customers with distributed environments, multinational manufacturers, and manufacturers migrating from a mainframe to minicomputer environment. The products run on IBM System 36 and 38 computers.

- AMAPS/36 and AMAPS/38 Manufacturing Systems are software applications designed to meet production control requirements. System modules include Inventory Management, Material Requirements Planning, Purchasing, Order Processing, and Production Cost Management. The Manufacturing System is fully integrated with the AMAPS/36 and AMAPS/38 Financial System.
- The MSA AMAPS/36 and AMAPS/38 Financial Systems provide cash and financial management with special features for consolidation, currency conversion, and intercompany reporting. The system also conforms to local legal, fiscal, and language requirements throughout the world. The AMAPS/36 and AMAPS/38 Financial Systems consist of integrated accounting applications that are fully integrated with the AMAPS/36 and AMAPS/38 Manufacturing Systems. Modules include Accounts Payable, Accounts Receivable, Cash Controller, General Ledger, and Fixed Assets.
- AMAPS/G manufacturing system is marketed to manufacturers who manufacture to contractors, primarily government contractors. The system addresses the special reporting requirements of contract manufacturers. The system runs on IBM and compatible mainframes. Modules include:
 - Costing System.
 - Bill of Material System.
 - Capacity Requirements Planning.
 - Contract Engineering System.
 - Master Production Scheduling.
 - Material Control System.
 - Material Requirements Planning.
 - Process and Routing System.
 - Purchasing Control System.
 - Shop Floor Control.
- MSA's CIM Partners Program provides for the cooperative development of interfaces between MSA manufacturing products and products from other vendors. In 1987 MSA announced its CIM Partners Program with the following companies: Tandem Computers, Rexnord, Inc., Infolink Corp., Metro Controls, and Aion Corp.
- Health Care. MSA provides an integrated line of patient accounting and information systems for hospitals with 300 or more beds.
- MSA applications include Cost Accounting, Case Mix Management, General Ledger, Accounts Payable, Patient Accounting, Purchasing, Inventory, Fixed Assets, and Payroll/Personnel.

- There are currently over 200 health care customers.
- Higher Education. Through Information Associates, Inc., MSA markets the Series Z product line for the higher education market.
 - Products include Financial Records System, Student Information System, Human Resource System, and Alumni/Development System.
 - There are currently over 400 customers worldwide.
- Financial Services. MSA provides integrated financial accounting software to over 500 banks, savings and loans, and insurance companies located in 30 countries. Clients use MSA products for property control, financial and tax accounting, depreciation forecasting, disbursement control, purchasing, personnel management, and payroll.
- Government. To serve the information management needs of state and local government, MSA's product line can be used individually or integrated into a complete system. Products include Budgetary Control, General Ledger, Accounts Payable, Accounts Receivable, EDI, Purchasing, Human Resources, Inventory, and Fixed Assets.
- Logistics. Integrated systems include Demand Management, for manufacturers with integrated distribution; Materials Management, for organizations that consume materials internally; and Distribution Management, for wholesaler/distributors, retailers, and manufacturers with separate distribution operations. Products include Accounts Payable, Accounts Receivable, EDI, Inventory, Distribution Resource Planning, Order Processing, Purchasing, and Sales Forecasting.
 - MSA's Expert EDI product allows purchasing, order processing, accounts payable, and accounts receivable systems to communicate directly with customer and supplier systems.
 - In November 1986 MSA announced an agreement with Tran-Settlements, Inc. to integrate TransLate™ EDI translation software with MSA software.
 - In December 1986, MSA announced an agreement with General Electric Information Services Company (GEISCO) to provide an interface between Expert EDI and MSA's other products and GEISCO's EDI*EXPRESS network EDI service.
- Other MSA/vendor agreements include the following:
 - MSA's Market Alliance Program manages the cooperative product, support, and development and marketing efforts between MSA and Honeywell Bull, NCR, and Unisys.

- In March 1986, MSA announced an agreement with the National Association of Credit Management (NACM) to market a joint-technology credit analysis package that links MSA's mainframe Accounts Receivable System with the NACM's microcomputer productivity system, Corporate Credit ManagerTM.
- During 1986, MSA signed an agreement with Price Waterhouse in the U.S., allowing them to enhance their expertise on MSA's financial and human resource systems.
- o Customer support services available include the following:
 - Multiple levels of installation support.
 - MSA currently offers over 150 different customer education courses from major training centers worldwide.
 - During 1986, MSA introduced two computer-based services:
 - Expert Insight gives customers 24-hour access to MSA's Client Support Center in Atlanta through a PC-to-PC link and allows the customer to browse a data base of timely product information and system corrections.
 - Computer-Based Diagnostics provides a direct, interactive link between the customer's mainframe computer and the MSA Client Support Center. With this service, customers give MSA selective access to their relevant system files or programs.

INDUSTRY MARKETS

- o MSA's revenue is derived approximately as follows:

Manufacturing	41%
Banking and finance	13
Distribution	11
Services	6
Government/education	7
Insurance	6
Commercial/transportation	3
Utilities	5
Medical	4
Other	<u>4</u>
	100%

- o More than three-fourths of the Fortune 500 companies use one or more of MSA's packages.

GEOGRAPHIC MARKETS

- Approximately 72% of MSA's 1986 revenue was derived from the U.S. and 28% from international sources. A three-year summary of source of revenue follows (\$ millions):

ITEM \ FISCAL YEAR	1986		1985		1984	
	Revenue	Percent of Total	Revenue	Percent of Total	Revenue	Percent of Total
U.S.	\$138.5	72%	\$116.0	76%	\$108.8	77%
Europe	34.1	18	20.7	14	16.5	12
Asia/Pacific	10.8	6	7.1	5	7.1	5
Canada	7.1	3	6.7	4	6.7	5
Other	2.9	1	1.2	1	2.7	2
Total	\$193.4	100%	\$151.7	100%	\$141.8	100%

- U.S. offices are located in Atlanta, Baltimore, Boston, Boulder, Chicago, Columbus, Dallas/Ft. Worth, Denver, Detroit, Houston, Kansas City, Los Angeles, Minneapolis/St. Paul, Nashville, New Haven, New York, Philadelphia, Phoenix, Portland, Rochester, San Diego, San Francisco, San Jose, Seattle, Syracuse, Washington, D.C., and Winston-Salem.
- Foreign offices are located in Canada, the U.K., Belgium, France, West Germany, Holland, Italy, Spain, Sweden, Norway, Ireland, Kuwait, Saudi Arabia, China, Japan, New Zealand, Australia, and Singapore. MSA also has representatives in Brazil, Mexico, Peru, and Puerto Rico.

COMPUTER HARDWARE AND SOFTWARE

- MSA maintains the following equipment at its Atlanta headquarters:
 - 1 IBM 3090-400, operating under MVS/XA.
 - 1 IBM 3081-K32, operating under MVS/XA.
 - 1 IBM 4381-PI4, operating under VM/DOS VSE.
 - 1 IBM 4381-Q24, operating under MVS/XA.

FINANCIAL UPDATE TO PROFILE DATED JANUARY 1985*

MANAGEMENT SCIENCE AMERICA, INC.
3445 Peachtree Road, N.E.
Atlanta, GA 30326-1276
(404) 239-2000

John P. Imlay, Jr., Chairman and CEO
William M. Graves, President
Public Corporation, OTC
Total Employees: 1,944
Total Revenue, Fiscal Year End
12/31/85: \$151,661,000

MANAGEMENT SCIENCE AMERICA, INC. FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1985	1984	1983	1982	1981
Revenue (a)	\$ 151,661	\$ 141,816	\$ 117,364	\$ 87,742	\$ 67,254
• Percent increase from previous year	7%	21%	34%	30%	32%
Income before income taxes and extraordinary item (a)	\$ 10,544	\$ 25,393	\$ 19,490	\$ 14,697	\$ 10,269
• Percent increase (decrease) from previous year	(58%)	30%	33%	43%	81%
(Loss) from discontinued operations	-	\$ (7,503)	\$ (203)	\$ (103)	\$ (18)
(Loss) on disposal of discontinued operations	-	\$ (5,952)	-	-	-
Net income	\$ 6,860	\$ 243	\$ 10,769	\$ 8,955	\$ 5,487
• Percent increase (decrease) from previous year	(b)	(98%)	20%	63%	88%
Earnings per share from continuing operations	\$ 0.39	\$ 0.77	\$ 0.64	\$ 0.63	\$ 0.41
Net earnings per share	\$ 0.39	\$ 0.01	\$ 0.63	\$ 0.62	\$ 0.41
• Percent increase (decrease) from previous year	(b)	(98%)	2%	51%	52%

(a) Restated to reflect continuing operations only

(b) Percent change exceeds 1,000%

*Replaces Financial Update of June 1985

1 of 4

March 1986

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INPUT

- During the fourth quarter of 1984 MSA made the decision to dispose of its retail microcomputer software operations.
 - After significant growth over the previous two years, retail micro-computer software revenue declined 38% from \$21.7 million in 1983 to \$13.5 million in 1984. Though operating results from the division were approximately breakeven in 1982 and 1983, these operations generated a net loss after tax of approximately \$7.5 million in 1984.
 - MSA management felt it had become clear that the retail micro-computer software market would be merchandising driven rather than technology and service driven, and determined that these operations were not compatible with its principal business of marketing software and support services that provide mainframe-based, integrated business solutions.
 - On January 14, 1985, MSA announced the sale of its Micro Distribution Division (MDD) to Corporate Software, Inc. of Waltham (MA). MMD provides microcomputer software and services to Fortune 1000 companies on a high volume/low cost basis. Terms of the sale were not disclosed.
 - On February 21, 1985, MSA announced the sale of DesignWare, Inc. and Edu-Ware Services, Inc. to Encyclopedia Britannica, Inc. These subsidiaries provide educational microcomputer software products and now operate as Britannica Learning Corporation, a division of Encyclopedia Britannica. Terms of the sale were not disclosed.
 - On February 26, 1985, MSA announced the sale of Peachtree Business Management System (PBMS) software to Plusmark Business Systems Limited. The PBMS series of microcomputer business products was formerly marketed through MSA's Peachtree Software International Limited subsidiary. MSA also announced that other products marketed by the international subsidiary had been licensed to distributors in Europe, Africa, Japan, and the Middle East.
 - On May 3, 1985, MSA announced the sale of Peachtree Software Incorporated to Intelligent Systems Corporation for an undisclosed amount of cash and notes.
 - Under the terms of the agreement, MSA retained certain equipment as well as rights to distribute certain of the software as part of its Expert Link micro-mainframe offering.
 - Peachtree Software develops and markets microcomputer applications software for accounting and office productivity.

- A three-year summary of operating results of the discontinued operations described above follows (\$ thousands):

	<u>1984</u>	<u>1983</u>	<u>1982</u>
Operating revenue	\$ 13,504	\$ 21,691	\$ 9,362
(Loss) before taxes	\$ (13,767)	\$ (341)	\$ (521)
Income tax benefit	\$ 6,264	\$ 138	\$ 428
Net (loss)	\$ (7,503)	\$ (203)	\$ (103)

- In March 1985, MSA announced the acquisition of the Marketing, Clinical, and Financial Information System (MCFIS) developed by Rush-Presbyterian-St. Luke's Medical Center in Chicago (IL).
 - MCFIS is an IBM mainframe hospital case mix management software product currently in use at over 40 U.S. hospitals.
 - MSA plans to integrate MCFIS with its health care cost accounting software, Expert Link, and Information Expert.
 - Terms of the acquisition were not disclosed.

SOURCE OF REVENUE

- A three-year summary of source of revenue from continuing operations follows (\$ millions):

	<u>1985</u>	<u>1984</u>	<u>1983</u>
Software package license fees	\$87.8	\$93.3	\$83.6
Support agreement fees	54.4	39.8	28.4
Customer education fees	5.8	5.6	3.6
Other	<u>3.7</u>	<u>3.1</u>	<u>1.8</u>
	\$151.7	\$141.8	\$117.4

- MSA has licensed over 13,000 software products to more than 5,600 customers worldwide.
 - Approximately two-thirds of the Fortune 500 companies use one or more of the company's packages.

- Customers include organizations in manufacturing, distribution, banking, insurance, retail, wholesale, healthcare, transportation, and energy-related industries, as well as school systems, higher education institutions, and federal, state, and local governments.
- Approximately 76% of MSA's 1985 revenue was derived from the U.S. and 24% from international sources. A further breakdown of source of revenue for the past three years follows (\$ millions):

	<u>1985</u>	<u>1984</u>	<u>1983</u>
U.S.	\$116.0	\$108.8	\$92.6
Europe	20.7	16.5	12.3
Asia/Pacific	7.1	7.1	5.4
Canada	6.7	6.7	5.2
Other	<u>1.2</u>	<u>2.7</u>	<u>1.9</u>
	\$151.7	\$141.8	\$117.4

NEW PRODUCTS AND SERVICES

- Information Expert^{T.M.}, MSA's fourth generation technology introduced in 1984, provides the following expert system components:
 - Expert Reporting^{T.M.} guides users through retrieval and reporting of information from multiple data bases and applications.
 - ExpertLink^{T.M.} permits two-way communications between micro-computers and mainframes.
 - Expert Query^{T.M.} provides natural language interfaces to allow users to interact with management information systems.
 - Expert Screen Painting^{T.M.} (under development) provides end users with realtime screen building facilities.
 - Expert Language, a fourth generation language.
 - Expert Data Dictionary allows users to integrate all their software under one centralized environment.
- During 1985 MSA introduced the Expert Series, the complete line of MSA applications software based on Information Expert technology.
 - In addition to a line of integrated and standalone products for the commercial/general business market, MSA is marketing the MSA Expert Series to targeted industries with industry-specific software applications. Current offerings include the Manufacturing Expert Series, the MSA Financial Institution Expert Series, the MSA Government Expert Series, and the MSA Health Care Expert Series.

COMPANY HIGHLIGHT

MANAGEMENT SCIENCE AMERICA, INC. John P. Imlay, Jr., Chairman and CEO
3445 Peachtree Road, N.E. William M. Graves, President
Atlanta, GA 30326 Public Corporation, OTC
(404) 239-2000 Total Employees: 1,857
Total Revenue, Fiscal Year End
12/31/83: \$139,055,247

THE COMPANY

- Management Science America, Inc. (MSA), founded in 1963, develops and markets financial management, human resource, and manufacturing applications software packages for use on medium-to-large-scale mainframes. The company also markets accounting, office productivity, and educational software products for microcomputers through its Peachtree Software Incorporated subsidiary. MSA is the world's largest independent supplier of applications software products.
- Revenue for the nine months ending September 30, 1984 was \$94.5 million, a 14% increase over revenue of \$82.8 million for the same period in 1983. Net losses for the period were nearly \$3 million, compared with net income of \$574,000 a year ago.
 - MSA management attributes the losses primarily to the performance of its retail microcomputer software subsidiaries. Mainframe software revenue increased 22% over the first nine months of 1984.
 - The company had originally predicted net income of \$18 million for 1984 and a 34% increase in revenue to \$187 million. MSA now expects to report lower earnings per share for 1984 than it did for 1983.
 - In October 1984 MSA announced it was considering selling its retail microcomputer software business or spinning it off as a separate company. Financial results for the year ending December 31, 1984, will treat Peachtree Software as discontinued operations.
 - In January 1985 MSA announced it had sold its Microcomputer Distribution Division to Corporate Software, Inc. of Waltham (MA). The division sold microcomputer software from various vendors and provided various support services.
- MSA's 1983 revenue was \$139.1 million, a 43% increase over 1982 revenue of \$97.1 million. Net income rose 20% from nearly \$9 million in 1982 to \$10.8 million in 1983. A five-year financial summary follows:

MANAGEMENT SCIENCE AMERICA, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1983	1982	1981	1980	1979
Revenue (a)	\$ 139,055	\$ 97,104	\$ 70,569	\$ 53,172	\$ 38,883
. Percent increase from previous year	43%	38%	33%	37%	N/A
Income before income taxes and extraordinary item	\$ 19,149	\$ 14,166	\$ 10,112	\$ 5,360	\$ 5,466
. Percent increase (decrease) from previous year	35%	40%	89%	(2%)	125%
Net income	\$ 10,769	\$ 8,955	\$ 5,487	\$ 2,912	\$ 2,591
. Percent increase from previous year	20%	63%	88%	12%	128%
Earnings per share	\$ 0.63	\$ 0.62	\$ 0.41	\$ 0.27	\$ 0.23
. Percent increase from previous year	2%	51%	52%	17%	130%

- (a) MSA no longer reports investment/interest income as revenue; revenue figures have been restated accordingly. Income from investments and interest for the years 1983, 1982, and 1981 was \$6,120,941, \$4,139,900, and \$2,570,508, respectively.
- MSA management attributes revenue growth during 1983 to substantial increases in domestic microcomputer software sales and mainframe software licenses.
 - Slower net income growth in 1983 was attributed to a higher effective tax rate. The marginal increase in earnings per share reflects an 18% increase in the number of weighted average shares outstanding.
 - Research and development expenditures amounted to \$28.9 million in 1983 (21% of total revenue), compared to \$21.8 million in 1982 (22%) and \$16.4 million in 1981 (23%).
 - In April 1983 MSA completed its third public offering of 3,000,000 shares. MSA sold 2.8 million shares, and certain stockholders sold the remainder. The proceeds were reserved for possible acquisitions of companies, products, or equipment and for general corporate purposes.

- MSA made four acquisitions subsequent to the 1983 public offering:
 - In June 1983 MSA acquired the computer software division of Computeristics, Inc. in a cash and stock transaction worth approximately \$4.4 million. Terms of the acquisition included the distribution of 100,000 shares of MSA common stock to the shareholders of Computeristics and \$1 million in deferred cash payments.
 - The software division of Computeristics, based in Hamden (CT), develops order processing and accounts receivable software for IBM mainframes.
 - The 62 employees of the Computeristics division were absorbed by MSA. At the time of the acquisition, the software group had revenue of approximately \$3 to \$4 million.
 - The acquisition was accounted for as a purchase and the results of the Computeristics division have been combined with those of MSA since the date of acquisition.
 - In July 1983 MSA acquired Edu-Ware Services, Inc. in a cash and stock transaction worth approximately \$1.5 million. The deal included 47,489 shares of MSA's common stock, cash, and deferred payments based on future revenue and profit of Edu-Ware.
 - Edu-Ware Services, based in Agoura Hills (CA), develops and markets educational software for Apple, Atari, and IBM microcomputers. The operations of Edu-Ware have been merged with the Peachtree Software subsidiary.
 - Edu-Ware, formed in 1979, had fiscal 1983 revenue of \$1.6 million and employed 50 people at the time of the acquisition.
 - The acquisition was accounted for as a purchase and the results of Edu-Ware's operations have been combined with those of MSA since the date of acquisition.
 - In July 1984 MSA acquired DesignWare, Inc., a supplier of educational microcomputer software. MSA acquired all of DesignWare's outstanding stock in exchange for approximately \$2.4 million.
 - The San Francisco-based company offers a line of 11 educational/entertainment products geared for preschool to grade school-age children.
 - The operations of DesignWare have been merged with Peachtree Software. The acquisition was accounted for as a purchase.
 - In August 1984 MSA acquired substantially all the assets of Distribution Research Associates (DRA) of Oak Brook (IL). Terms were not disclosed, but the approximate value of the transaction was \$300,000.

MANAGEMENT SCIENCE AMERICA, INC.

- Founded in 1981, DRA markets mainframe software for distribution resource planning. MSA plans to integrate the software with its other manufacturing applications.
- The operations of DRA have been merged with MSA's corporate operations in Atlanta. The acquisition was accounted for as a purchase.
- MSA expects to continue its acquisition strategy in the mainframe software area. Future acquisitions could focus on such markets as hospitals and banks.
- In addition to its Peachtree Software subsidiary MSA has five international subsidiaries, as follows:
 - Management Science America (Canada) Ltd., headquartered in Toronto.
 - MSA International, Inc., headquartered in Maidenhead, Berkshire, (U.K.).
 - MSA (Management Science America) Limited, headquartered in Maidenhead, Berkshire (U.K.).
 - Management Science America (Australia) Pty. Ltd., in North Sydney.
 - Peachtree Software International Ltd., headquartered in Maidenhead, Berkshire (U.K.), was formed in late 1981 to market Peachtree products internationally.
- MSA had 1,857 employees in December 1983 and 1,997 in September 1984. Approximately 18% are employed outside the U.S.
- Major competitors for MSA's financial management software include McCormack & Dodge (Dun & Bradstreet), Software International (GEISCO), and UCCEL. Competition in the manufacturing software area comes from Comserv, Cullinet, IBM, and Martin Marietta Data Systems. The Peachtree Software subsidiary competes against Lotus Development Corporation and MicroPro International, among others.

KEY PRODUCTS AND SERVICES

- MSA revenue for the past three years was derived as follows (\$ millions):

	<u>1983</u>	<u>1982</u>	<u>1981</u>
Software package license fees	\$104.1	\$70.0	\$50.8
Support agreement fees	28.4	22.6	16.4
Customer education fees	3.7	3.2	2.1
Other	<u>2.9</u>	<u>1.3</u>	<u>1.3</u>
	\$139.1	\$97.1	\$70.6

- Eighty-four percent (\$117.4 million) of MSA's 1983 revenue was derived from the sale and support of general business packages for mainframes. The company specializes in financial management, human resource, and manufacturing applications. MSA has over 11,500 installations of its mainframe products in over 5,000 customer locations.
- A three-year summary of mainframe software product revenue by application area is shown below (\$ millions):

	<u>1983</u>	<u>1982</u>	<u>1981</u>
License and Support Revenue			
• Financial Management	\$ 74.5	\$ 53.5	\$ 37.3
• Human Resource	33.9	29.2	26.8
• Manufacturing	<u>3.6</u>	<u>0.7</u>	<u>-</u>
Subtotal	\$ 112.0	\$ 83.4	\$ 64.1
Customer Education and Other			
	<u>5.4</u>	<u>4.3</u>	<u>3.2</u>
Total	\$ 117.4	\$ 87.7	\$ 67.3

- Annual fees for mainframe software support after the first year typically range from 7% to 11% of the current product price. Approximately 75% of MSA's customers subscribe to these support services and support fees represented about 20% of MSA's 1983 revenue.
- MSA's two most widely used products are the Payroll/Personnel (Human Resource) System and the General Ledger System. During 1983 the General Ledger System generated over \$30 million in revenue and its life-to-date revenue passed the \$100 million mark. The Payroll/Personnel System reached this milestone in 1982. MSA is the only company with two applications software products over the \$100 million revenue level.
- MSA offers on-line, real-time versions of most of its packages. MSA applications support a variety of data base management systems, including IBM's IMS and DLI, ADR's Datacom/DB, Cullinet's IDMS, and Software AG's ADABAS. The packages can be purchased individually or as an integrated system.
- MSA's mainframe software products are written in ANS COBOL and operate on IBM 360, 370, 30XX, and 43XX computers, Honeywell Level 66, Sperry 1100, and Burroughs mainframes.

- A summary chart of MSA's mainframe applications software products is presented in the exhibit. Products include:
 - The General Ledger System (GL) provides accounting and financial control information through management and regulatory reports, budgeting, and cost allocation facilities. Some of the functions and associated features include general ledger posting; "EASY-PLAN" budgeting (operates in real time and can handle multiple budgets); planning (which is facilitated by a historical data base, statistical information, what-if analyses, simulations, and multiple projection techniques), and complete cost accounting (with subledger accounting and accounting analysis). The GL system also features on-line entry, inquiry, and adjustments, real-time updates, and reporting capabilities.
 - Fixed Assets Accounting facilitates accounting for asset acquisitions, transfers, and dispositions. Historical cost, current cost accounting, and depreciation information are maintained for each asset to provide for financial and tax reporting. Lease, current cost, and constant dollar accounting are provided through reporting facilities which comply with all current regulations.
 - Accounts Payable controls the disbursement process. The system provides on-line invoice entry; real-time validation for duplicate invoices, invalid vendors, and invalid accounts, and invoice matching for approval of invoices within user-specified tolerances. Accounts Payable automatically determines problem conditions such as out-of-balance or out-of-tolerance invoices, and provides for on-line error correction and exception authorization. It also provides processing of adjustments, payment generation, and payment reconciliation. Accounting features include automatic proration of tax, discount, and freight allocations, and the ability to do multiperiod distributions.
 - Accounts Receivable provides comprehensive reporting of credit, collection, and historical information. Features include automatic cash application, finance charge computation and posting, and collection correspondence; balance forward and open item processing; deduction audits; daily cash forecasting; and aged trial balance, daily exception, and customer status reports. The system includes an on-line capability for monitoring marginal accounts.
 - Inventory Management provides inventory control functions for expendable supplies and materials. Features include open purchase order status and purchasing activity reports; inventory status, calculations, projections, and control; demand history reports; automatic purchase order issuance; and on-line inquiry for inventory status and open purchase order data.
 - Forecasting and Modeling is a decision support tool that analyzes business alternatives, financial trends, asset/liability management, and cash flow and revenue projections. Features include time series

EXHIBIT

MSA MAINFRAME SOFTWARE PRODUCTS

PRODUCTS	NUMBER OF INSTALLATIONS
<u>FINANCIAL MANAGEMENT</u>	
GENERAL LEDGER	1,794
FIXED ASSETS ACCOUNTING	861
ACCOUNTS PAYABLE	965
ACCOUNTS RECEIVABLE	520
INVENTORY MANAGEMENT	410
FORECASTING AND MODELING	210
PROJECT TRACKING	69
FOREIGN EXCHANGE	52
BUDGETARY CONTROL	87
ORDER PROCESSING	48
PURCHASING	13
<u>HUMAN RESOURCES</u>	
PAYROLL/PERSONNEL	914
PAYROLL	691
PERSONNEL	44
ALLTAX®	4,000 +
INTERNATIONAL PAYROLL/PERSONNEL	500
<u>MANUFACTURING</u>	155
MANUFACTURING STANDARDS	
INVENTORY CONTROL	
ADVANCED INVENTORY MANAGEMENT	
ORDER PROCESSING	
MASTER PRODUCTION SCHEDULING	
MATERIALS REQUIREMENTS PLANNING	
PURCHASING	
HISTORICAL FORECASTING	
SHOP FLOOR CONTROL	
CAPACITY REQUIREMENTS PLANNING	
PRODUCT COSTING	
MANUFACTURING ACCOUNTING	
DISTRIBUTION RESOURCE PLANNING	3
SALES FORECASTING	3
TOTAL	11,339 +

analysis and curve fitting, automatic seasonal adjustment, and regression, sensitivity, and risk analysis. Color graphics capabilities are also available.

- Project Tracking is a project management and control system designed to operate independently or integrated with MSA's Fixed Assets Accounting System. The system can compare and report on actual and budgeted amounts; calculate estimated completion costs; flag cost overruns; forecast future project payments; report interest expense by project; identify such costs as property units, indirect charges, fees and permits, freight, taxes, and interest; compare percent of completion by actual expenditure versus appraisal; track quantities by purchase order and invoice; provide material reporting; and determine the cost basis for book and tax accounting by allocating indirect project costs.
- Foreign Exchange (formerly Currency Management) maintains exchange, interest, and inflation rates to perform calculations for cross rates, averages, forward points, and forward rates, and works in conjunction with other MSA financial products. The Financial Cost/Earnings function calculates the percent per annum cost or earning associated with a variety of hedging options (Forward Contract, Borrow/Spot/Invest, Swap) for any type of transaction or time period. Foreign Exchange monitors exchange information and calculates realized and unrealized gain or loss on currency exchange. Alternate payment methods available include various types of check formats, notes, drafts, and transfers on hard copy, tapes, or diskettes.
- The Budgetary Control System provides real-time expenditure control, encumbrance, and fund accounting. The system provides procurement/disbursement control at each stage of the purchase cycle. All documents are tracked against budget and matched—requisition to purchase order/contract to receipt to invoices. Expenditure control takes place when available funds are checked at each step in the cycle. All necessary accounting entries to record commitments and encumbrances are automatically produced by the system for posting to MSA's General Ledger. Approved invoice information is automatically generated to MSA's Accounts Payable.
- Order Processing facilitates manufacturing and financial systems integration. The system features real-time credit checks at both order entry and shipment time. Multiple order types are allowed, including regular orders, blanket orders, and warehouse transfer orders. Shipment reporting captures all shipment as it actually took place ensuring accurate invoicing to the customer, and operator notification of quantity or weight variances. Multilevel pricing allows the pricing structure to be established at the customer group or item level. Effective date ranges and quantity break capabilities are included.
- The MSA Purchasing System is fully integrated with the MSA Accounts Payable and Manufacturing Systems. Its decision support and pur-

chasing capabilities include requisitions, quotations, sourcing support, purchase order generation, receiving, and inspection/disposition. The system can generate and track requests for quotations (RFQs), provide quotation analysis and review, and handle standard phrases and clauses.

- Payroll/Personnel is a real-time integrated system designed to provide management of human resources. The system supports the payroll process from tax computation, check preparation, reporting, and labor/expense distribution. ACH, 401(K), and IRA direct deposits are also handled. Personnel management is provided through a centralized data base. The system provides benefits administration and cafeteria plan information; career path planning; educational and skills inventory; and workforce utilization information. Additional facilities include position control to manage employee population and salary administration; layoff, recall, grievances, and seniority tracking; and maintenance of job-related accidents and illnesses.
- In 1984 MSA introduced an enhanced version of ALLTAX[®]. ALLTAX calculates all payroll withholding taxes for employees and employer-related payroll taxes. It calculates federal, state, city, and county withholding taxes as well as disability, FICA, FUI, and SUI. Tax updates can be installed as they are received and the system will determine automatically when the changes will go into effect. ALLTAX permits tax changes without making a COBOL change or recompiling, and is included in the MSA Payroll/Personnel system.
- International Payroll/Personnel is an on-line payroll calculation and disbursement and personnel information and reporting product designed for use outside North America. The system interfaces with General Ledger, providing information regarding foreign payroll expenses, taxes, and benefit items. Statutory compliance, banking specifications, and other country-unique requirements are maintained for the U.K., Australia, and South Africa.
- The MSA Manufacturing System helps plan and control the total operations of a manufacturing company. It provides complete system integration to users in the discrete, repetitive, process, and government contractor manufacturing environments.
 - The Manufacturing Standards Module defines engineering, materials, and labor standards used throughout the manufacturing system. This includes information about parts, bills of materials, work centers, standard routings, and engineering change control.
 - The Inventory Control Module provides information about inventories and establishes the reporting disciplines necessary to support the formal manufacturing system. This module manages balance-on-hand inventories and tracks all orders from release to close, including customer orders, purchase orders, and

internal manufacturing orders. With Inventory Control, high-volume, repetitive production is managed through production schedules rather than by specific work orders, and back-flushing of component materials can be done at any point during production using checkpoint, count point, or pay point reporting.

- The Advanced Inventory Management Module provides management control over inventories by tracking lot and serial numbers, and monitoring shelf life and expiration dates. Additionally, it supports random stocking, area or zone cycle counting, and picking and firm allocation in both stockroom and warehouse environments.
- The Order Processing Module allows for customer order entry, accurate promise date access, shipment support and billing, and timely invoicing.
- The Master Production Scheduling Module creates and controls master schedules to support an overall production plan. Rough-cut capacity planning helps ensure that proper labor and machine capacity are available to meet all scheduled obligations. On-line, real-time information about available-to-promise inventory permits timely delivery of finished goods, and facilitates the determination of precise customer promise dates.
- The Materials Requirements Planning Module determines component parts necessary to fulfill master schedule requirements. Using bills of materials, inventory status, order information, and engineering change data, this module delivers time-phased materials requirements plans according to timing and lot sizing rules already established.
- The Purchasing Module works in conjunction with the Inventory Control module to provide a vendor management system. This module provides complete vendor histories broken down by price, quantity, and delivery records.
- The Historical Forecasting Module is designed to facilitate cost-effective production and delivery of spare parts. It determines exactly what kind of spare parts inventory is needed and when.
- The Shop Floor Control Module schedules labor and machine time by reporting on all shop floor activity, and tracking shop orders by operation.
- The Capacity Requirements Planning Module supplies detailed projections of labor and machine capacity needs. By comparing planned load hours to available capacity hours, potential overload and underload conditions can be identified.

- The Product Costing Module develops precise cost information using engineering and manufacturing data maintained in the Manufacturing Standards Module. It can also simulate how changes in manufacturing standards will impact costs.
- The MSA Manufacturing Accounting Module measures actual costs and compares them to standard costs established in the Product Costing Module, allowing isolation and control of variances.
- The Distribution Resource Planning System monitors inventories, customer service levels, and other distribution resources, and integrates this planning process into the overall business plan. The manufacturing and purchasing process is supported by an ability to compute input for master scheduling; compute time-phased order releases for purchasing; evaluate discount opportunities; manage firm-planned orders; and provide available-to-promise information for each distribution location.
- The MSA Sales Forecasting System is a decision support management planning tool that provides structured planning and monitoring of sales forecasts. It also brings this planning process into the overall business plan for use in distribution, manufacturing, purchasing, marketing, and financial management. The Sales Forecasting System is fully integrated with the MSA Manufacturing, Order Processing, and Purchasing Systems to support the requirements of manufacturers, wholesalers, and retailers.
- Some of MSA's applications were adapted to run on IBM 4321/4331/4341/4361 computers under IBM's SSX operating systems. These versions of MSA's software were developed following IBM's selection of MSA to participate in SSX field testing in 1981. They were initially marketed to companies with limited programming staffs, smaller mainframes, and decentralized processing facilities under the name System 43, but markets have been expanded to include larger data processing installations. Applications available include: Forecasting and Modeling, Budgetary Control, Fixed Assets Accounting, Inventory Management, Payroll/Personnel, General Ledger, Accounts Payable, Accounts Receivable, and Foreign Exchange.
- Other MSA products designed for use with its mainframe applications packages include the following:
 - The Information Expert, introduced during 1984, is a fourth-generation development facility with information reporting and retrieval capabilities. Components for real-time query and screen painting are currently under development. Information Expert was incorporated across the MSA mainframe product line during 1984.
 - Expert Link is MSA's two-way communications software that enables transfer of information between microcomputers and mainframes. The

user can transfer any mainframe screen, even from non-MSA systems, or select specific information from the screen.

- A Database Sharing capability allows the user to select individual fields and specify key ranges when transferring information from any MSA on-line system directly to microcomputer software for further analysis.
 - The software permits distributed PC data entry using micro-based entry screens. Editing and validation requirements are already defined based on mainframe specifications. The user can also build screens and set up edit/validation rules to ensure data integrity.
- EASYSscreenTM. is an on-line screen generator that enhances on-line facilities across the MSA product line.
- In August 1984 MSA announced it is developing a hospital cost accounting system. Co-developers of the system include Rush Presbyterian-St. Luke's Medical Center of Chicago, St. Joseph's Hospital of Tampa, and the Geisinger System of Danville (PA). The new system will be adapted from software presently being used by manufacturing clients. Availability is scheduled for 1985. Nine orders for the system have already been taken.
- In June 1984 MSA signed a joint agreement with Applied Data Research, Inc. (ADR) allowing MSA to market a version of the ADR/Datacom data base management system and ADR/Datadictionary along with its manufacturing, human resource, and financial mainframe applications packages.
 - MSA and ADR will cross-train key personnel and share applications and systems software technology.
 - MSA will continue to support IBM data base management systems and data bases from other vendors.
- Customer support services available include the following:
 - MSA currently offers over 170 different customer education courses from 27 locations worldwide.
 - In May 1984 MSA opened a new Customer Support Center at its Atlanta headquarters that can be remotely accessed by MSA's mainframe software customers.
- MSA derived approximately \$21.7 million of 1983 revenue from microcomputer software products marketed through its Peachtree Software Incorporated subsidiary.
 - The subsidiary offered over 75 accounting, office productivity, and educational software products for a variety of microcomputers.

- In October 1984 MSA announced plans to discontinue the operations of this subsidiary. MSA has subsequently announced that Peachtree's 1984 financial results will be reported as discontinued operations and that the divestiture will be complete by the end of the first quarter of 1985.

INDUSTRY MARKETS

- Approximately 50% of MSA's 1983 mainframe software revenue was derived from manufacturing companies and a large percentage came from banking clients.
 - The company also has customers in insurance, retail and wholesale distribution, health care, transportation, education, and energy-related industries, as well as federal, state, and local governments.
 - More than 320 of the Fortune 500 companies use one or more of MSA's packages.
- Peachtree has licensed over 445,000 microcomputer packages, serving small business and personal computer users.

GEOGRAPHIC MARKETS

- Seventy-eight percent of MSA's 1983 revenue was derived from clients across the U.S. and 22% was derived from foreign sources. A three-year summary of source of revenue by product follows (\$ millions):

	<u>1983</u>	<u>1982</u>	<u>1981</u>
Mainframe Software			
• U.S.	\$ 91.9	\$67.0	\$53.9
• Foreign	25.5	20.7	13.4
Microcomputer Software			
• U.S.	16.8	6.5	3.3
• Foreign	<u>4.9</u>	<u>2.9</u>	-
Total	\$ 139.1	\$97.1	\$70.6

- MSA maintains five regional U.S. offices in Atlanta, Oak Brook (IL), Dallas, Fort Lee (NJ), and Santa Monica (CA).
 - District offices are located in Burlington (MA), West Seneca (NY), Worthington (OH), Houston, Lakewood (CO), Southfield (MI), Kansas City, St. Louis, Brookfield (WI), Bloomington (MN), Hamden (CT), Fort Washington and Pittsburgh (PA), Mesa (AZ), Portland (OR), San Mateo (CA), Bellevue (WA), Alexandria (VA), and Winston-Salem (NC).

- International subsidiary locations are as follows:
 - MSA International, Inc. is headquartered in Maidenhead (U.K.), with additional offices in Brussels, Hong Kong, Norway, and Singapore.
 - Management Science America (Canada) Ltd. is headquartered in Toronto, Ontario, with additional offices in St. Laurent (Quebec) and Calgary.
 - Management Science America (Australia) Pty. Ltd. is headquartered in Sydney, with offices in Melbourne and New Zealand.

COMPUTER HARDWARE AND SOFTWARE

- MSA maintains the following equipment at its Atlanta headquarters:
 - 1 IBM 3033-N8, operating under VM/VSI/DOS VSE.
 - 1 IBM 3081-K32, operating under MVS/XA.
 - 1 IBM 4331, operating under SSX.

FINANCIAL UPDATE TO PROFILE DATED JANUARY 1985

MANAGEMENT SCIENCE AMERICA, INC.

3445 Peachtree Road, N.E.
Atlanta, GA 30326
(404) 239-2000

John P. Imlay, Jr., Chairman and CEO
William M. Graves, President
Public Corporation, OTC
Total Employees: 1,964
Total Revenue, Fiscal Year End
12/31/84: \$141,815,866

MANAGEMENT SCIENCE AMERICA, INC. FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1984	1983	1982	1981	1980
Revenue (a)	\$ 141,816	\$ 117,364	\$ 87,742	\$ 67,254	\$ 51,137
• Percent increase from previous year	21%	34%	30%	32%	N/A
Income before income taxes and extraordinary item (a)	\$ 25,393	\$ 19,490	\$ 14,697	\$ 10,269	\$ 5,668
• Percent increase (decrease) from previous year	30%	33%	43%	81%	N/A
(Loss) from discontinued operations	\$ (7,503)	\$ (203)	\$ (103)	\$ (18)	\$ (294)
(Loss) on disposal of discontinued operations	\$ (5,952)	-	-	-	-
Net income	\$ 243	\$ 10,769	\$ 8,955	\$ 5,487	\$ 2,912
• Percent increase (decrease) from previous year	(98%)	20%	63%	88%	12%
Earnings per share from continuing operations	\$ 0.77	\$ 0.64	\$ 0.63	\$ 0.41	\$ 0.29
Net earnings per share	\$ 0.01	\$ 0.63	\$ 0.62	\$ 0.41	\$ 0.27
• Percent increase (decrease) from previous year	(98%)	2%	51%	52%	17%

(a) Restated to reflect continuing operations only.

- During the fourth quarter of 1984 MSA made the decision to dispose of its retail microcomputer software operations.
 - After significant growth over the previous two years, retail microcomputer software revenue declined 38% from \$21.7 million in 1984 to \$13.5 million in 1984. Though operating results from the division were approximately breakeven in 1982 and 1983, these operations generated a net loss after tax of approximately \$7.5 million in 1984.
 - MSA management felt it had become clear that the retail microcomputer software market would be merchandising driven rather than technology and service driven, and determined that these operations were not compatible with its principal business of marketing software and support services that provide mainframe-based, integrated business solutions.
 - On January 14, 1985, MSA announced the sale of its Micro Distribution Division (MDD) to Corporate Software, Inc. of Waltham (MA). MMD provides microcomputer software and services to Fortune 1000 companies on a high volume/low cost basis. Terms of the sale were not disclosed.
 - On February 21, 1985, MSA announced the sale of DesignWare, Inc. and Edu-Ware Services, Inc. to Encyclopedia Britannica, Inc. These subsidiaries provide educational microcomputer software products and now operate as Britannica Learning Corporation, a division of Encyclopedia Britannica. Terms of the sale were not disclosed.
 - On February 26, 1985, MSA announced the sale of Peachtree Business Management System (PBMS) software to Plusmark Business Systems Limited. The PBMS series of microcomputer business products was formerly marketed through MSA's Peachtree Software International Limited subsidiary. MSA also announced that other products marketed by the international subsidiary had been licensed to distributors in Europe, Africa, Japan, and the Middle East.
 - On May 3, 1985, MSA announced the sale of Peachtree Software Incorporated to Intelligent Systems Corporation for an undisclosed amount of cash and notes.
 - Under the terms of the agreement, MSA retained certain equipment as well as rights to distribute certain of the software as part of its Expert Link micro-mainframe offering.
 - Peachtree Software develops and markets microcomputer applications software for accounting and office productivity.

- A three-year summary of operating results of the discontinued operations described above follows (\$ thousands):

FISCAL YEAR		1984	1983	1982
ITEM				
Operating revenue		\$ 13,504	\$ 21,691	\$ 9,362
(Loss) before taxes		\$ (13,767)	\$ (341)	\$ (521)
Income tax benefit		\$ 6,264	\$ 138	\$ 428
Net (loss)		\$ (7,503)	\$ (203)	\$ (103)

- In March 1985, MSA announced the acquisition of the Marketing, Clinical, and Financial Information System (MCFIS) developed by Rush-Presbyterian-St. Luke's Medical Center in Chicago (IL).
 - MCFIS is an IBM mainframe hospital case mix management software product currently in use at over 40 U.S. hospitals.
 - MSA plans to integrate MCFIS with its health care cost accounting software, Expert Link, and Information Expert.
 - Terms of the acquisition were not disclosed.
- Revenue from continuing operations for the three months ending March 31, 1985 was nearly \$25 million, a 12% decrease from \$28.4 million for the first quarter of 1984. Net losses were \$2.7 million compared to net income of \$484,000 a year ago.

SOURCE OF REVENUE

- A three-year summary of source of revenue from continuing operations follows (\$ millions):

FISCAL YEAR		1984	1983	1982
ITEM				
Software package license fees		\$93.3	\$83.6	\$60.9
Support agreement fees		39.8	28.4	22.5
Customer education fees		5.6	3.6	3.1
Other		<u>3.1</u>	<u>1.8</u>	<u>1.2</u>
		\$141.8	\$117.4	\$87.7



FINANCIAL UPDATE TO HIGHLIGHT DATED OCTOBER 1982

MANAGEMENT SCIENCE AMERICA, INC.

3445 Peachtree Road, N.E.
Atlanta, GA 30326
(404) 239-2000

John P. Imlay, Jr., Chairman
William M. Graves, President
Public Corporation, OTC
Total Employees: 1,348
Total Revenue, Fiscal Year End
12/31/82: \$101,243,578
Computer Services Revenue:
\$95,787,179

MANAGEMENT SCIENCE AMERICA, INC. FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1982	1981	1980	1979	1978
Revenue	\$ 101,244	\$ 73,139	\$ 53,724	\$ 39,397	\$ 26,160
• Percent increase from previous year	38%	36%	36%	51%	50%
Income before taxes	\$ 14,166	\$ 10,112	\$ 5,360	\$ 5,466	\$ 2,427
• Percent increase (decrease) from previous year	40%	89%	(2%)	125%	54%
Net income	\$ 8,955	\$ 5,487	\$ 2,912	\$ 2,591	\$ 1,134
• Percent increase from previous year	63%	88%	12%	128%	44%
Earnings per share (a)	\$ 0.62	\$ 0.41	\$ 0.27	\$ 0.23	\$ 0.10
• Percent increase from previous year	51%	52%	17%	130%	N/A

(a) Restated to reflect a two-for-one stock split effective December 1982.

SOURCE OF REVENUE

- MSA revenue for the past three years was derived as follows (\$ millions):

	<u>1982</u>	<u>1981</u>	<u>1980</u>
Software package license fees	\$70.0	\$50.8	\$39.4
Support agreement fees	22.6	16.4	11.1
Customer education	3.2	2.1	1.4
Other	1.3	1.3	1.2
Interest	<u>4.1</u>	<u>2.5</u>	<u>0.6</u>
Total	\$101.2	\$73.1	\$53.7

COMPANY HIGHLIGHT

MANAGEMENT SCIENCE AMERICA, INC.

3445 Peachtree Road, N.E.
Atlanta, GA 30326
(404) 239-2000

John P. Imlay, Chairman and CEO
William M. Graves, President and COO
Public Corporation, OTC
Total Employees: 1,002
Total Revenue, Fiscal Year End
12/31/81: \$73,139,348
Computer Services Revenue:
\$70,568,840

THE COMPANY

- Management Science America, Inc. (MSA), founded in 1963, develops and markets financial management, human resource, cash management, and manufacturing applications software packages for use on medium- to large-scale mainframes. The company also markets general business, office productivity, and vertical market software products for microcomputers. MSA is the largest independent international supplier of packaged software products.
- MSA went public in April 1981, generating \$15.9 million in net proceeds from the sale of 1,650,000 shares of its common stock. Of the shares, 1.1 million were sold by MSA and 550,000 by the selling stockholders. Of the proceeds, \$2.7 million was used to pay off the debt incurred for the purchase of computer equipment, and approximately \$660,000 was used to retire debentures and equipment notes as part of the acquisition of Peachtree Software. The remaining \$12.6 million was invested in short-term instruments as of December 1981. A portion of the proceeds will also be used to fund MSA's Aristo Manufacturing Systems acquisition.
- In May 1982 MSA completed its second public stock offering of 710,000 shares. MSA sold 321,000 shares, and certain stockholders sold the remainder. MSA proceeds of \$6.4 million will be used for working capital and acquisition purposes.
- On November 17, 1982 MSA announced a 2-for-1 stock split, payable December 17, 1982, which will double the number of MSA common shares from approximately 7 million to 14 million.
- MSA's 1981 revenue increased 36% to \$73.1 million from \$53.7 million in 1980. Net income rose 88% to \$5.5 million during the same period. A five-year financial summary follows:

MANAGEMENT SCIENCE AMERICA, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1981	1980	1979	1978	1977
Revenue	\$ 73,139	\$ 53,724*	\$ 39,397*	\$ 26,160	\$ 17,443
• Percent increase from previous year	36%	36%	51%	50%	29%
Income before taxes and extraordinary item	\$ 10,112	\$ 5,360	\$ 5,466	\$ 2,427	\$ 1,579
• Percent increase (decrease) from previous year	89%	(2%)	125%	54%	(31%)
Net income	\$ 5,487	\$ 2,912	\$ 2,591	\$ 1,134	\$ 786
• Percent increase (decrease) from previous year	88%	12%	128%	44%	(30%)
Earnings per share	\$ 0.83	\$ 0.53	\$ 0.46	\$ 0.20	\$ 0.13
• Percent increase (decrease) from previous year	57%	15%	130%	54%	(28%)

* Financial information for 1979 and 1980 has been restated to account for the acquisition of Peachtree Software Incorporated on a pooling-of-interests basis.

- Growth in 1981 revenue was due primarily to the greater volume of products sold and general price increases.
- Net income and income before taxes declined as a percent of revenue in 1980 as a result of MSA expenditures related to an increased level of marketing, product and educational facility enhancement efforts, an increase in foreign personnel, and computer center expansion.
- Substantial increases in net income and income before taxes in 1979 were the result of higher prices from the addition of on-line and data base capabilities to existing products, MSA's acceptance of multiyear support agreements, and the company's successful entry into Australia. The result was that revenue grew without an accompanying increase in many expense areas.
- Research and development expenditures were \$16.4 million (22% of revenue) and \$12.8 million (24% of revenue) in 1981 and 1980 respectively.

MANAGEMENT SCIENCE AMERICA, INC.

- MSA revenue and net income for the nine months ending September 30, 1982 were \$59.6 million and \$262,000, respectively. For the same period in 1981 the company had revenue of \$42.8 million and a net loss of \$140,000.
- Management expects 1982 revenue and net income to increase 30% to 35% over 1981. Historically, MSA generates almost all its net income in the final quarter of the year.
- MSA acquired the following companies during the past two years.
 - In August 1980 MSA acquired the Q-Pac Payroll Software System and the outstanding capital stock of Q-PAC America, Inc. and Q-PAC Services Ltd., for \$1.7 million in cash and notes. The acquisition facilitated the company's move into foreign markets, enabling MSA to offer a human resource system internationally.
 - In June 1981 MSA acquired Peachtree Software Incorporated in a cash and stock transaction worth approximately \$5.5 million. Terms of the acquisition included the distribution of 222,212 shares of MSA common stock to shareholders and option holders of Peachtree and the purchase of certain Peachtree debentures for \$452,500 plus \$1,500 accrued interest.
 - Peachtree Software, based in Atlanta, operates as an MSA subsidiary providing financial and office productivity software to microcomputer users. Peachtree has approximately 130 employees.
 - Peachtree revenue for calendar 1980 was approximately \$2 million, with a net loss of \$294,000. Calendar 1981 revenue was approximately \$3.3 million with break-even operations.
 - During the first nine months of 1982, Peachtree revenue increased 140% over the same period in 1981.
 - Management expects revenue to more than double in 1982, contributing 8% of total MSA revenue.
 - In January 1982 MSA acquired the Arista Manufacturing Systems Division of Xerox Corporation. MSA agreed to pay Xerox \$4 million during 1982 and to assume certain obligations under existing customer contracts. Xerox has agreed to pay MSA \$2.4 million during 1982 to complete development of certain software packages required to be furnished under these contracts. MSA will account for the acquisition using the purchase method.
 - Arista, based in Winston-Salem (NC), markets manufacturing management applications software for use on IBM and plug-compatible mainframes.

- With revenue in the \$2 to \$3 million range, Arista has approximately 70 employees and will operate as part of MSA's new Manufacturing Systems Division. Arista products are undergoing further development by MSA, and no significant revenue is expected for 1982.
- MSA's five international subsidiaries are:
 - Management Science America (Canada) Ltd., headquartered in Toronto.
 - MSA International, Inc., headquartered in Maidenhead, Berkshire (U.K.).
 - MSA (Management Science America) Limited, headquartered in Maidenhead, Berkshire (U.K.).
 - Management Science America (Australia) Pty. Ltd., in North Sydney.
 - Peachtree Software International Ltd., headquartered in Maidenhead, Berkshire (U.K.), was formed in late 1981 to market Peachtree products internationally.
- MSA had 1,002 employees in December 1981 and over 1,200 in September 1982.
- Major competitors for MSA's financial software include McCormack & Dodge, Software International (GEISCO), and University Computing. Major competitors of Peachtree Software are MicroPro International, VisiCorp, and Systems Plus.

KEY PRODUCTS AND SERVICES

- MSA revenue for the past three years was derived as follows:

	1981	1980	1979
Software package			
license fees	\$50.8	\$39.4	\$28.6
Support agreement fees	16.4	11.1	8.3
Customer education	2.1	1.4	0.8
Other	1.3	1.2	1.2
Interest	<u>2.5</u>	<u>0.6</u>	<u>0.5</u>
Total	\$73.1	\$53.7	\$39.4

- Increase in interest revenue in 1981 is the result of the investment of public offering proceeds in short-term instruments.
- The majority of MSA's 1981 software product revenue was derived from general business packages for mainframes. The company specializes in

designing, constructing, enhancing, and marketing financial management and human resource software packages. MSA has over 7,500 installations of its mainframe products in over 4,000 organizations.

- MSA's two most widely used products are the Human Resource and General Ledger/FICS systems. General Ledger/FICS has generated over \$70 million in revenue. MSA's Human Resource system is the first and only applications software product to generate over \$100 million in revenue.
- A five-year summary by functional area of revenue derived from mainframe software product license and support contracts is shown below (\$ thousands).

	1981	1980	1979	1978	1977
Financial Management	\$39,234	\$28,077	\$19,906	\$12,682	\$9,189
• Percent of total license and support revenue	60%	56%	54%	49%	53%
Human Resources	\$26,482	\$21,971	\$17,258	\$13,082	\$8,086
• Percent of total license and support revenue	40%	44%	46%	51%	47%

- Applications software offered by MSA are written in ANS COBOL and operate on IBM 360, 370, 303X, 308X, and 4300 Series computers, and Burroughs B3500, 4700, 5900, 6700, and 6800 computers. Some systems are also offered on Honeywell, Digital Equipment Corporation, NCR, Amdahl, and Univac equipment. Packages running on non-IBM (or compatible) equipment accounted for approximately 10% of 1981 revenue.
- MSA offers on-line versions of most of its packages and also provides versions of its products for a variety of data base management systems. Packages may be purchased individually or as an integrated system.
- A summary chart of MSA's mainframe applications software is presented in Exhibit A. Products include:
 - General Ledger/Financial Information and Control System (GL/FICS), an industry-independent general ledger system with specialized options for the financial, educational, government, and insurance industries. The system accepts input from all other MSA packages, passing historical information to a budget and planning module and to the Financial Forecasting and Modeling System. Also included are exception and custom reporting options and graphic display features.

EXHIBIT A

MSA SOFTWARE PRODUCTS

PRODUCT	NUMBER OF INSTALLATIONS
<ul style="list-style-type: none"> ● Financial Management <ul style="list-style-type: none"> — General Ledger/FICS 1,100+ — Forecasting and Modeling 102 — Accounts Receivable 301 — Accounts Payable and Purchase Order Control 463 — Inventory and Purchasing 264 — Fixed Assets Accounting 566+ — Currency Management NEW — System 43 NEW ● Human Resources <ul style="list-style-type: none"> — Personnel Management and Reporting 638 — Payroll 1,260 — ALLTAX^{T.M.} Taxing System 2,500+ — ALLTAX^{T.M.} Reporter NEW — International Payroll/Personnel (Q-PAC) 400+ ● Manufacturing <ul style="list-style-type: none"> — MSA Manufacturing System 100 <ul style="list-style-type: none"> • Manufacturing Standards • Inventory Record Control • Historical Forecasting • Master Production Scheduling • Material Requirements Planning • Capacity Requirements Planning • Shop Floor Control • Procurement Management • Cost Management (Under Development) • Simulation Requirements Planning (Under Development) 	
TOTAL	7,694

- GL is a modular system which includes subsystems for general ledger posting, budget and planning, and cost accounting. Specific applications include U.S. and foreign currency conversion, cash flow modeling, variable budgeting, and corporate consolidations. Encumbrance accounting assists government and educational institutions in the budgeting process.
- FICS is designed to assist commercial banks and thrift institutions with internal bank fund transfer evaluations and financial and responsibility reporting.
- GL/FICS was expanded in 1981 to include posted transaction inquiry, on-line report maintenance, and EASY-PLANTM, an on-line budgeting module.
- Forecasting and Modeling is a user-oriented system providing tools for modeling, forecasting, and analyzing business alternatives, financial trends, asset/liability management, and cash flow and revenue projections. Features include time series analysis and curve fitting, automatic seasonal adjustment, and regression, sensitivity, and risk analysis.
- Accounts Receivable provides comprehensive reporting of credit, collection, and historical information. Features include automatic cash application, finance charge computation and posting, and collection correspondence; balance forward and open item processing; deduction audits; daily cash forecasting; and aged trial balance, daily exception, and customer status reports.
- Accounts Payable and Purchase Order Control analyzes invoices, determines payment dates, and provides information for funds transfer. During 1981, Purchase Order Control facilities were added to integrate Accounts Payable with MSA's Inventory and Purchasing System. The system includes the following features:
 - Aged trial balance.
 - Posting of variances between standard and purchase costs.
 - A variety of payment types and schedules.
 - Five years of vendor history.
 - Ongoing tax calculations and records.
 - Expense distributions, reimbursements, and tracking of standing advances.
 - A variety of check-writing capabilities.
 - Check reconciliation (optional).
 - Projections of cash applications and a register of bank requirements.
- Inventory and Purchasing provides inventory control functions for expendable supplies and materials. Features include open purchase

order status and purchasing activity reports; inventory status, calculations, projections, and control; comprehensive demand history reports; automatic purchase order issuance; and on-line inquiry for inventory status and open purchase order data.

- Fixed Assets Accounting facilitates accounting for asset acquisitions, transfers, and dispositions. Historical cost, current cost accounting, and depreciation information are maintained for each asset to provide for financial and tax reporting. Lease, current cost, and constant dollar accounting are provided through reporting facilities which comply with all current regulations. The system complies with the Economic Recovery Act of 1981.
- The Currency Management System, developed by MSA and introduced in 1982, monitors exchange information and calculates realized and unrealized gain or loss on currency exchange. Alternate payment methods available include various types of check formats, notes, drafts, and transfers on hard copy, tapes, or diskettes.
- MSA's Human Resource System consists of two major components, Personnel Management and Reporting and Payroll.
 - Personnel Management and Reporting has seven optional modules built around a central data base of personnel information.
 - The central data base contains personal data, government reporting information, skills inventories, educational background, performance information, and other data for each employee. Extensive reporting facilities are available. A flexible screen generator allows user-defined screens and on-line security.
 - Optional modules are Benefits/ERISA, Job and Position Control, Life-to-Date History, Lost Time/Health and Safety, Affirmative Action/Applicant Flow, Career Development, and Labor Relations.
 - Payroll calculates salaries of hourly and salaried employees including withholding taxes, calculating and processing deductions and other earnings, printing checks, and standard and special reports. Payroll Accounting may be integrated with MSA's Personnel Management and Reporting system and interfaced to any general ledger system.
 - Federal, state, county, and city income taxes are calculated using MSA's ALLTAX software. Canadian and provincial income taxes can also be calculated and deducted.

- Direct deposit services are available. They include deposit of all or part of the pay into bank or thrift accounts or for payment against personal or mortgage loans. Automated Clearing House (ACH), 401 (K), and IRA direct deposits are also handled.
- Typical services include transaction loading and validation, payroll master file update, payroll computation, data extraction for checks and reports, check printing, report printing, on-line inquiry, and maintenance. Additional, optional services include time card balancing, earnings history printouts, cost and labor distribution processing, check reconciliation, stop payment, and automatic check reversal generation.
- ALLTAX^{T.M.} Taxing System functions as a module of the MSA Payroll System or the customer's in-house payroll system, calculating federal, state, city, and county withholding taxes as well as disability, FICA, FUI, and SUL. Computations use a standard formula and a variable factors table which is updated to reflect changes in tax rates and reporting requirements. The Canadian function calculates Dominion and Provincial taxes, UIC, and Canadian and Quebec Pension Plans.
- The ALLTAX REPORTER^{T.M.}, introduced in November 1981, provides regulatory tax reporting on continuous paper forms and/or on magnetic tape for the U.S. and Canadian governments, individual states, territories, and local tax jurisdictions. The system derives information required for reports from the user's payroll files and produces audit reports for verification of tapes before printing. A COBOL subsystem interfacing with most payroll systems, the REPORTER may be purchased separately to keep users updated with changing regulations.
- International Payroll/Personnel (Q-PAC) is an automated payroll calculation and disbursement and personnel information and reporting product designed for use outside North America. The system interfaces with GL/FICS, providing information regarding foreign payroll expenses, taxes, and benefit items. Statutory compliance, banking specifications, and other country-unique requirements are maintained for the United Kingdom, Australia, and South Africa.
- Recent enhancements to MSA's mainframe software line include the following:
 - During 1981 the company introduced EASY-SCREEN^{T.M.}, an on-line screen generator, and its real-time module, EASY-AUDIT^{T.M.}, enhancing on-line facilities across the MSA product line.
 - The MSA Color Graphics module was also introduced in 1981 for use with MSA's General Ledger and Forecasting and Modeling systems. The system generates color-coded charts and graphs and uses IBM color graphic hardware and software.

- In September 1982 MSA introduced HELP, a tutorial facility providing accountants and managers with on-line access to instructions for using any of MSA's on-line systems, including error correction. HELP is available at no cost to customers with maintenance contracts.
- In March 1982 MSA released System 43^{T.M.}, a full line of business applications software for use on IBM 4321/4331 computers running under IBM's SSX operating system. Applications available include general ledger, accounts receivable and payable, fixed assets, inventory and purchasing, forecasting and modeling, and payroll and personnel reporting. System 43 has expanded MSA's marketing base to include clients with limited programming staffs, smaller mainframes, and decentralized processing facilities. The systems are a result of IBM's selection of MSA to participate in SSX field testing in 1981.
- MSA offers the MSA Manufacturing System, an integrated set of manufacturing applications for mainframes, as a result of its January 1982 acquisition of Arista Manufacturing Systems. The applications are marketed to both discrete and process manufacturers, which already compose over one-third of MSA's client base.
 - The products run on IBM 360, 370, 303X, and 4300 Series and on plug-compatible equipment under DOS and OS, and are being developed for use on the HP 3000.
 - Written in ANS COBOL for both on-line and batch environments, there are over 100 installations of the MSA Manufacturing System in 25 states and Canada. MSA will market the system worldwide. Available modules are outlined in Exhibit A.
 - In October 1982 MSA announced the Extended Closed Loop^{T.M.} Manufacturing System. The system will provide the first total integration of business and manufacturing applications and will be based on MSA products. Advantages include reduced implementation costs, avoidance of perpetual system interface delays, and elimination of manual interfaces and information redundancy.
- The company announced two joint marketing and development agreements in 1982 which will increase MSA software product distribution for non-IBM mainframes while decreasing related development costs.
 - In June 1982, MSA finalized an agreement with Honeywell for cooperative development and marketing of eight MSA financial and human resource packages. Honeywell is converting on-line and data base versions of MSA products to operate on its DPS 8 and Level 66/DPS mainframes running under GCOS III and GCOS 8.
 - Under the agreement, Honeywell will provide on-site software maintenance, and MSA will provide education and training.

- Honeywell will pay MSA a minimum of \$1.5 to \$2 million, plus royalties, over a five-year period beginning in 1983.
- The packages, some of which will be available beginning in January 1982, will be priced at \$50,000 to \$60,000.
- In September 1982 MSA announced a similar agreement with Sperry Univac for cooperative development and worldwide marketing of MSA products for users of Univac Series 1100 computers.
 - MSA packages to be used include General Ledger, Accounts Receivable, Accounts Payable and Purchase Order Control, Inventory and Purchasing, Fixed Assets Accounting, Cash Management, Personnel Management and Reporting, and Payroll.
 - Several of the products are available immediately, with batch and on-line versions for all products planned for 1983.
- In August 1982 MSA reached an agreement with Software AG to cooperatively develop interfaces between its general ledger, accounts receivable and payable, and human resources packages and Software AG's ADABAS data base management system. The interfaces, called the ADABAS/MSA Capabilities, will be marketed and supported by Software AG.
- In August 1982 MSA announced the integration of its mainframe and micro-computer software through PeachLink^{T.M.}, a software link which will enable managers to transfer information from the corporate data base to a personal computer for desktop analysis and distributed accounting at remote locations.
 - The integrated systems will emphasize business applications and use MSA's Application Network Architecture, a new architecture for applications networks which uses a functional layer concept.
 - Several integrated mainframe/microcomputer applications packages will be released during the next year. One package, MSA Executive PeachPak, will be targeted at large corporations and sold in bundled packages of 10 for \$30,000 (\$3,000 per unit). Executive PeachPak includes the following Peachtree applications:
 - PeachText^{T.M.} word processor, including Spelling Proofreader, Dictionary, and Thesaurus.
 - Mailing List Manager.
 - Business Graphics System.
 - PeachCalc^{T.M.} II (modified for use with mainframes).
 - PeachLink.

- The integrated software will be sold through MSA's direct sales force for mainframe software packages, opening a new distribution channel for microcomputer products.
- MSA offers general business, office productivity, and vertical market software products for microcomputers through its Peachtree Software Incorporated subsidiary. Clients are primarily small businesses with revenue of \$500,000 to \$15 million in the distribution and services (CPAs, lawyers, etc.) industries. Peachtree has licensed over 50,000 microcomputer packages. Products are outlined in Exhibit B.
 - Most packages can operate in combination with other Peachtree products. Products may be used on any Z80-, 8080-, or 8085-based microcomputer running under CP/M. Peachpak 40 software is designed for the Apple II and PeachPak 4 software runs on the IBM Personal Computer.
 - Most packages are written in MicrosoftTM BASIC. Some are written in assembly language and CIS COBOL.
 - Peachtree products are marketed through four distribution channels.
 - During 1981 Peachtree products were marketed by over 900 dealers. In April 1982 the company began offering a new, more exclusive dealership plan which includes authorized software centers, intensified dealer support of products, and increased dealer support from Peachtree. There are currently 250 dealers under the new plan.
 - Products are also licensed directly to customers by Peachtree.
 - Twelve microcomputer vendors market the products under royalty agreements.
 - In August 1982 Peachtree began marketing its products through micro software distributors. Distributors, expected to number eight by the end of 1982, currently include Softsel Computer Products, Inc., Micro Distributors, Inc., Software distributors, Inc., Byte Industries, and Citation Software (Canada).
 - New services made available by Peachtree in 1981 include:
 - PeachTaxTM, a subscription service for users of the PeachPayTM payroll accounting package. PeachTax updates users on the latest payroll tax structure changes, allowing for customization of federal, state, and local tax withholding requirements for a user's specific location. The PeachTax service is priced at \$200 per year.

EXHIBIT B

PEACHTREE SOFTWARE INCORPORATED*
SOFTWARE PRODUCTS

PRODUCT	MODULES	SUGGESTED RETAIL PRICE PER MODULE
PeachPak 8 Accounting Series (Formerly Series 5)	General Ledger, Accounts Receivable, Accounts Payable, Sales Invoicing, Inventory, PeachPay ^{T.M.} Payroll	\$750 Each Module
PeachPak 4 Accounting Series (Formerly Series 4)	General Ledger, Accounts Receivable, Accounts Payable, Inventory	\$600 Each Module
PeachPak 4 - For the IBM Personal Computer	General Ledger, Accounts Receivable, Accounts Payable	\$600 Each Module
PeachPak 40 Accounting Series (Formerly Series 40) - For the Apple II	General Ledger, Accounts Receivable, Accounts Payable, Inventory	\$400 Each Module
PeachPak 6 Client Accounting Series (Formerly Series 6) - For CPAs	Client Posting and Accounting Passive Payroll	\$1,500 \$ 600
PeachPak 7 Accounting Series (Formerly Series 7) - Sales Tracker ^{T.M.} COBOL Sales Order Processing Packages	Accounts Receivable and Sales Analysis Order Entry Inventory	\$2,000 \$1,000 \$1,400
PeachPak 9 Office Productivity Series (Formerly the Magicians)	PeachText ^{T.M.} Word Processor (Formerly Magic Wand ^{T.M.}) Spelling Proofreader PeachCalc ^{T.M.} Electronic Spread Sheet Mailing List Manager Telecommunications Calendar Management System Random House Thesaurus	\$ 500 \$ 300 \$ 375 \$ 375 \$ 375 \$ 375 \$ 200
PeachPak 10 Project Management	Job Cost System	\$1,000
PeachTree Graphics Language	PeachTree Graphics Language Business Graphics System	\$ 600 \$ 475

* Does not include products marketed only by PeachTree Software International Ltd.

- A service center for dealers was established in 1981 to augment Peachtree's dealer hot line service.
- Under a 1981 contract, Peachtree designed general ledger, accounts receivable, and accounts payable packages for IBM's Personal Computer which are sold through IBM.
 - Peachtree's PeachPak 4 Accounting Series, introduced in 1982, is a more basic version of the accounting packages marketed by Peachtree for use on the IBM Personal Computer.
- Peachtree also maintains relationships with Hewlett-Packard, Apple, Zenith, Osborne, Lanier, NEC, Digital Equipment, Wang, and Epson.
- Recent Peachtree product acquisitions include:
 - In April 1982 Peachtree acquired, on a license basis, Automation Consultants' Job Cost System. The system, used in Peachtree's PeachPak 10 Product Management product, tracks operating costs for engineering, construction, or business projects.
 - Peachtree Software International acquired the rights to market COMPACCT, a series of COBOL accounting packages tailored to U.K. accounting requirements, in April 1982. COMPACCT is a product of CSA Micro Systems Ltd., of London, and is now marketed as Peachtree Business Management Systems in the U.K.
 - In 1982 Peachtree acquired the rights to market The Random House Dictionary and Thesaurus (from Dictronic), Black's Law Dictionary, and Stedman's Medical Dictionary. The computerized dictionaries will be available as extra-cost options on the Spelling Proofreader package. The Random House Thesaurus will be available on PeachText.
- Recent Peachtree product introductions include:
 - A Calendar Management System for PeachPak 9.
 - The Peachtree Graphics Language (PGL), introduced in September 1982. The product is marketed under an exclusive agreement with PGL coauthors from Computer Graphics Group in Atlanta.
 - PGL can be used on any 8-bit CP/M microcomputer and with most printers and plotters. The product can zoom, pan, scroll, and rotate shapes and generate graphs.
 - Business Graphics System, the first applications package written in PGL, provides a menu-driven color graphics

interface to the PeachCalc electronic spreadsheet and PeachText word processor products.

- Products in the final stages of development include:
 - A fixed asset accounting program designed for capital-intensive businesses which will have an optional interface to Peachtree's general ledger software.
 - Information Access, a utility package allowing major files in Peachtree accounting packages to be read and manipulated by PeachText and the Mailing List Manager.
- Peachtree withdrew its Property Management system in 1982 in order to present a more integrated line of business accounting products.

INDUSTRY MARKETS

- Approximately 33% of MSA's 1981 revenue was from manufacturing companies, and a large percentage came from banking and finance clients.
- There is also some concentration in the areas of insurance, health care, education, transportation, retail and wholesale distribution, government, and energy-related companies.
- One or more of the company's packages are used by 282 of the Fortune 500 companies.

GEOGRAPHIC MARKETS

- Eighty-two percent of MSA's 1981 revenue was derived from clients across U.S. geographic sectors. Foreign revenue represented 18% or \$13.4 million of 1981 revenue.
- Approximately 20% of new business in 1981 was derived from international operations. MSA management projects that overseas business will represent about one-third of total revenue in five years.

- Revenue was distributed geographically in 1981 as follows:

United States	82
United Kingdom	7
Canada	4
Western Europe	3
Australia/New Zealand	3
Other International	1
	<hr/>
	100%

- MSA maintains four regional U.S. offices in Atlanta, Oak Brook (IL), Fort Lee (NJ), and Santa Monica (CA).

MANAGEMENT SCIENCE AMERICA, INC.

- District offices are located in Woburn (MA), Worthington (OH), Dallas, Houston, Morrison (CO), St. Paul (MN), Ft. Washington (PA), Burlingame (CA), Bellevue (WA), Alexandria (VA), and Winston-Salem (NC).
- Canadian operations are headquartered in Toronto with offices in St. Laurent (Quebec), Vancouver, and Calgary. Other international offices, headquartered in Maidenhead, Berkshire (U.K.), are in Oslo, Brussels, Singapore, Hong Kong, and North Sydney.
- Independent agents located in Tokyo and Randburg service Japan and South Africa.
- During the third quarter of 1982 MSA formed agreements with two new agents to market mainframe software in Germany and Greece.

COMPUTER HARDWARE AND SOFTWARE

- MSA maintains the following equipment at its Atlanta headquarters.
 - 1 IBM 3033, MVS.
 - 1 IBM 370/158, OS/VSI, VM, DOS/VSE.
 - 1 IBM 4341, OS/VSI, VM, DOS/VSE.
 - 1 IBM 3081.
- MSA has purchased CICS, IMS, TAPS, and EDOS software products. The company also has the right to use ADABAS, IDMS, and DATACOM/DC for testing purposes.

COMPANY PROFILE

MANAGEMENT SCIENCE AMERICA, INC.
3445 Peachtree Road, N.E.
Atlanta, GA 30326
(404) 262-2376

John P. Imlay, Chairman and CEO
William Graves, President and COO
Public Corporation, OTC
Total Employees: 953
Total Revenue, Fiscal Year End
12/31/80: \$51,689,416

THE COMPANY

- Management Science America, Inc. (MSA), founded in 1963, develops and markets financial management and human resources software packages to organizations in a wide variety of industry sectors.
 - On April 8, 1981, MSA made a public offering of 1,650,000 shares of its common stock, generating an estimated \$16 million in net proceeds.
 - Approximately \$3 million of the proceeds were used to pay off debt incurred for the purchase of computer equipment. MSA will use the remaining proceeds for working capital and possible future acquisitions of computer services related companies, products, and equipment.
- MSA's 1980 revenue increased 37% to \$51.7 million from \$37.7 million in 1979. Net income rose 29% to \$3.2 million during the same period. A five-year financial summary follows:

MANAGEMENT SCIENCE AMERICA, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)

FISCAL YEAR ITEM	1980	1979	1978	1977	1976
Revenue	\$51,689	\$37,717	\$26,160	\$17,443	\$13,516
. Percent increase from previous year	37%	44%	50%	29%	-
Income before taxes and extraordinary item	\$ 5,668	\$ 5,354	\$ 2,427	\$ 1,579	\$ 2,304
. Percent increase (decrease) from previous year	6%	121%	54%	(31%)	-
Net income	\$ 3,206	\$ 2,494	\$ 1,134	\$ 786	\$ 1,127
. Percent increase (decrease) from previous year	29%	120%	44%	(30%)	-
Earnings per share	\$ 0.61	\$ 0.46	\$ 0.20	\$ 0.13	\$ 0.18
. Percent increase (decrease) from previous year	33%	130%	54%	(28%)	-

- Growth in 1980 revenue was due primarily to the greater volume of products sold and general price increases. Net income and income before taxes declined as a percentage of revenue as a result of MSA's increased level of marketing, product enhancement efforts, and computer center expansion.
 - Research and development expenditures for 1979 and 1980 were \$8.8 million and \$12.4 million, respectively.
- Substantial increases in net income and income before taxes in 1979 were the result of higher prices from the addition of on-line and data base capabilities to existing products, MSA's acceptance of multi-year support agreements, and the company's successful entry into Australia. The result was that revenue grew without an accompanying increase in many expense areas.
- In August 1980, MSA acquired the Q-Pac Payroll Software System and the outstanding capital stock of Q PAC America, Inc. and Q PAC Services Ltd., for \$1,646,000 in cash and notes. The acquisition facilitates the company's move into foreign markets, enabling MSA to offer a human resource system internationally.
- In June 1981, MSA acquired Peachtree Software Inc. in a cash and stock transaction worth approximately \$5.5 million. Terms of the acquisition include the distribution of 222,212 shares of MSA common stock to shareholders and option holders of Peachtree and the purchase of certain Peachtree debentures for \$452,500.

MANAGEMENT SCIENCE AMERICA, INC.

- Peachtree Software, based in Atlanta, will operate as a MSA subsidiary providing financial applications software to microcomputer users. Peachtree revenue for its fiscal year ended January 31, 1981, was approximately \$2.3 million with a net loss of \$100,000. Employees number about 50.
- MSA's three international subsidiaries are:
 - MSA International, Inc., headquartered in London.
 - MSA (Management Science America) Limited, headquartered in London.
 - Management Science America (Australia) Pty. Ltd., in North Sydney.
- As of July 31, 1981, the 953 MSA employees were segmented as follows:

- Marketing/sales	115
- Software services/ customer support	661
- Computer operations	54
- General and administrative	<u>123</u>
	953

KEY PRODUCTS AND SERVICES

- One hundred percent of MSA's 1980 revenue was derived from general business software products. The company specializes in designing, constructing, enhancing, and marketing financial management and human resources software packages. MSA currently has approximately 7,200 installations in over 3,000 organizations. The two most widely used products, MSA's Payroll System and the General Ledger/FICS System, have each generated in excess of \$50 million in revenue.
 - Applications software offered by MSA is written in ANS COBOL and operates on IBM Systems/360, 370, 303X, and 4300 series computers, and Burroughs B3500, 4700, 6700, and 6800 computers. Some systems are also offered on Honeywell, Digital Equipment Corporation, NCR, Amdahl, and Univac equipment.
 - MSA offers on-line versions of most of its packages and also provides versions of its products for a variety of data base management systems. Packages may be purchased individually or as an integrated system.
- A summary chart of MSA's applications software is presented in Exhibit A. Major products include:
 - General Ledger/Financial Information and Control System (GL/FICS) is an industry-independent general ledger system with specialized options for the financial, educational, government, and insurance industries. The system accepts input from all other MSA packages, passing historical information to a budget and planning module and to the Financial Forecasting and Modeling System. Also included are exception and custom reporting options and graphic display features.

EXHIBIT A

MSA SOFTWARE PRODUCTS

PRODUCT	NUMBER OF INSTALLATIONS	PRICE
• FINANCIAL MANAGEMENT		
— GENERAL LEDGER/FICS	1,100	\$51,750 - \$124,200
— FINANCIAL FORECASTING AND MODELING	41	40,250 - 69,000
— ACCOUNTS RECEIVABLE	247	48,875 - 104,650
— ACCOUNTS PAYABLE	428	32,200 - 52,900
— PROCUREMENT MATCHING SYSTEM	NEW	32,200 - 44,850
— SUPPLIES INVENTORY CONTROL AND PURCHASING	231	26,450 - 57,500
— FIXED ASSETS ACCOUNTING	566	29,900 - 50,600
• HUMAN RESOURCES		
— PERSONNEL MANAGEMENT AND REPORTING	533	39,100 - 158,700
— PAYROLL ACCOUNTING	1,127	44,850 - 94,300
— ALLTAX ^{T.M.}	2,500	2,000 - 5,800
— ALLTAX ^{T.M.} REPORTER	NEW	9,000
— Q-PAC PAYROLL	400	25,000 - 120,000
TOTAL	7,173	—

- . GL is a modular system which includes subsystems for general ledger posting, budget and planning, and cost accounting. Specific applications include U.S. and foreign currency conversion, cash flow modeling, variable budgeting, and corporate consolidations. Encumbrance accounting assists government and educational institutions in the budgeting process.
- . FICS is designed to assist commercial banks and thrift institutions with internal bank fund transfer evaluations, and financial and responsibility reporting.
- Financial Forecasting and Modeling is a user-oriented system providing tools for modeling, forecasting, and analyzing business alternatives, financial trends, asset/liability management, and cash flow and revenue projections. Features include time series analysis and curve fitting, automatic seasonal adjustment, and regression, sensitivity, and risk analysis.
- Accounts Receivable provides comprehensive reporting of credit, collection, and historical information. The following features are included:
 - . Automatic cash application.
 - . Balance forward and open item processing.
 - . Automatic finance charge computation and posting.
 - . Deduction audits.
 - . Aged trial balance reports.
 - . Cash forecasting on a daily basis.
 - . Customer statement printing.
 - . Collection letter and message generation.
 - . Daily exception reports for the credit department.
 - . Customer status reports.
 - . Automated collection correspondence.
- Accounts Payable analyzes invoices, determines payment dates, and provides information for funds transfer. The system includes the following features:
 - . Aged trial balance.
 - . Posting of variances between standard and purchase costs.
 - . A variety of payment types and schedules.
 - . Five years of vendor history.
 - . Ongoing tax calculations and records.
 - . Expense distributions, reimbursements, and tracking of standing advances.
 - . A variety of check writing capabilities.
 - . Check reconciliation (optional).
 - . Projections of cash applications and a register of bank requirements.

- Procurement Matching, currently under development, will provide automated invoice auditing functions, matching purchase orders, requisitions, receiving documents, and invoices. The system reduces the need for redundant data entry and verification, allowing the user to specify discrepancy tolerances between the purchase order and invoice. The product is scheduled to be introduced in late 1981.
- Supplies Inventory Control and Purchasing provides inventory control functions for expendable supplies and materials. Features include open purchase order status and purchasing activity reports, inventory status, calculations, projections, and control; comprehensive demand history reports; automatic purchase order issuance; and on-line inquiry for inventory status and open purchase order data.
- Fixed Assets Accounting facilitates accounting for asset acquisitions, transfers, and dispositions. Historical cost, current cost accounting, and depreciation information are maintained for each asset to provide for financial and tax reporting. Lease accounting, current cost accounting, and constant dollar accounting are provided through reporting facilities which comply with all current regulations.
- Personnel Management and Reporting has eight optional modules built around a central data base of personnel information.
 - The central data base contains personal data, government reporting information, skills inventories, educational background, performance information, and other data for each employee. Extensive reporting facilities are available.
 - Optional modules are Benefits/ERISA, Job and Position Control, Life-to-Date History, Lost Time/Leave and Absence, Affirmative Action/Applicant Flow, Career Development and Labor Relations. Each of these modules is independent of any of the others. All work in conjunction with the central system and have extensive reporting facilities.
- Payroll Accounting is an automated payroll system for calculating salaries of hourly and salaried employees, including withholding taxes, calculating and processing deductions and other earnings, printing checks, and standard and special reports. Payroll Accounting may be interfaced with MSA's Personnel Management and Reporting system or any general ledger system.
 - Federal, state, county, and city income taxes are calculated using MSA's ALLTAX software. Canadian, federal, and provincial income taxes can also be calculated and deducted.

- Direct deposit services are available. They include deposit of all or part of the pay into bank or thrift accounts or for payment against personal or mortgage loans. Automated Clearing House (ACH) direct deposits are also handled.
- Typical services include transaction loading and validation, payroll master file update, payroll computation, data extraction for checks and reports, check printing, and report printing. Additional, optional services include time card balancing, earnings history printouts, cost and labor distribution processing, check reconciliation, stop payment, and check reversal generation.
- ALLTAX^{T.M.} is a taxing system which functions as a module of the customer's payroll system, calculating federal, state, city, and county withholding taxes as well as disability, FICA, FUI, and SUI. Computations use a standard formula and a variable factors table which is updated to reflect changes in tax rates and reporting requirements. ALLTAX was developed by Management Information Services, which MSA acquired in 1974.
- The ALLTAX^{T.M.} Reporter is a parameter-driven report writer designed for payroll tax reporting as a companion product to MSA's ALLTAX. The Reporter furnishes payroll reports on continuous paper forms and/or on magnetic tape for the U.S. government, the Canadian government, and individual states, territories, and local tax jurisdictions. It is a COBOL subsystem that interfaces with most payroll systems. The Reporter derives information required for reports from the user's payroll files and converts a user's code structure as required.
- The product is being tested and finalized and will be available for general release in the third quarter of 1981.
- Q-PAC Payroll is an automated payroll calculation, disbursement, and reporting product designed for paying employees outside North America. The system interfaces with MSA's general ledger package, providing information regarding foreign payroll expenses, tax and benefit items. Statutory compliance, banking specifications, and other country-unique requirements are maintained for the United Kingdom, Australia, and South Africa. Previous to its acquisition of Q-PAC Payroll, MSA sales outside the U.S. consisted only of financial application packages.
- MSA now offers a series of general business software products for microcomputers through its Peachtree Software Inc. subsidiary. The products are marketed through 750 dealers and major microcomputer vendors. Clients are primarily small businesses with revenues of \$500,000 to \$15 million in the distribution and services (CPAs, lawyers, etc.) industries. Approximately 85% of fiscal 1981 revenue was derived from the U.S. Peachtree installations number over 20,000.

- Products may be used on any Z80-, 8080-, or 8085-based microcomputer running under CP/M. Series 40 software operates on the Apple II microcomputer. Series 50 software runs on the Texas Instruments 990/1.
- Peachtree software products are outlined in Exhibit B.
- In August 1981, MSA was one of the first vendors to announce accounting software packages designed for IBM's new Personal Computer. Included are adaptations of Peachtree's Series 5 general ledger, accounts receivable, and accounts payable packages developed under a contract with IBM.

INDUSTRY MARKETS

- Approximately 30% of MSA's 1980 revenue was derived from banking and finance clients, and 27% from manufacturing companies. There is also some concentration in the areas of insurance, health care, education, and transportation.

GEOGRAPHIC MARKETS

- Seventy-nine percent of MSA's 1980 revenue was derived from clients across U.S. geographic sectors. Foreign revenue represented 21% or \$10.9 million in 1980 revenue. Revenue derived from foreign sources, comprising an increasing proportion of total revenue, was 14% or \$5.4 million in 1979.
- Revenues were distributed geographically in 1980 as follows:

- Northeast	22%
- Midwest	21
- Southern	19
- Western	17
- United Kingdom	6
- Canada	5
- Western Europe	4
- Australia	4
- Other International	2
	<hr/>
	100%
- MSA maintains four regional U.S. offices, in Atlanta; Oak Brook, IL; Fort Lee, NJ; and Santa Monica, CA.
 - District offices are located in Boston, Columbus, Dallas, Denver, Houston, Minneapolis, Philadelphia, San Francisco, Seattle, and Washington D.C.
- International offices are located in London, Brussels, Sydney, Singapore, Toronto, Montreal, and Calgary.

EXHIBIT B

PEACHTREE SOFTWARE INC.

PRODUCT	DESCRIPTION	*PRICE PER PACKAGE
SERIES 4 — THE OLD RELIABLES	INTEGRATED ACCOUNTING SYSTEM INCLUDING GENERAL LEDGER, ACCOUNTS PAYABLE, ACCOUNTS RECEIVABLE, PAYROLL AND INVENTORY MANAGEMENT	\$625
SERIES 5 — THE NEW STANDARD ^{T.M.}	BASIC PACKAGES INCLUDING GENERAL LEDGER, ACCOUNTS PAYABLE, ACCOUNTS RECEIVABLE, SALES INVOICING, PEACHPAY ^{T.M.} , PAYROLL, AND INVENTORY MANAGEMENT	875
SERIES 6 — THE SPECIALISTS	CPA CLIENT POSTING AND ACCOUNTING, PROPERTY MANAGEMENT	1,500
SERIES 7 — THE MAX ^{T.M.}	COBOL PACKAGES INCLUDING SALES TRACKER ^{T.M.} , ACCOUNTS RECEIVABLE, INVENTORY, ORDER ENTRY, GENERAL LEDGER	2,250
SERIES 40 — TAILOR MADE	GENERAL LEDGER, ACCOUNTS PAYABLE, ACCOUNTS RECEIVABLE, PAYROLL, INVENTORY MANAGEMENT, MAILING LIST	375
SERIES 50 — TAILOR MADE	GENERAL LEDGER, ACCOUNTS PAYABLE, ACCOUNTS RECEIVABLE, PAYROLL	375
THE MAGICIANS	WORD PROCESSOR, MAIL LIST, SPELLING DICTIONARY, TELECOMMUNICATIONS	500 FOR WORD PROCESSOR 375 FOR OTHER SYSTEMS

*PRICES ARE ESTIMATED AVERAGE RETAIL PRICES.

COMPUTER HARDWARE AND SOFTWARE

- MSA maintains the following equipment at its Atlanta headquarters:
 - 1 IBM 3033, MVS.
 - 1 IBM 370/158, OS/VSI, VM, DOS/VSE.
 - 1 IBM 4341, OS/VSI, VM, DOS/VSE.
- MSA has purchased CICS, IMS, TAPS, and EDOS software products. The company also has the right to use ADABAS, IDMS, and DATACOM/DC for testing purposes.

COMPANY HIGHLIGHT

MANAGEMENT SCIENCE AMERICA, INC.

3445 Peachtree Road, N.E.
Atlanta, GA 30326
(404) 262-2376

John P. Imlay, Chairman and CEO
William M. Graves, President
Private Corporation
Total Employees: 500
Total Revenues, Fiscal Year End
12/31/78: \$25,648,205

THE COMPANY

- Management Science America, Inc. (MSA), was founded in 1963 by a group of Georgia Institute of Technology graduates. It offered research, consulting, and contract programming. In the late 1960s, MSA became one of the first companies to offer packaged applications software as its sole endeavor.
- In 1977, MSA established a new subsidiary, MSA International, Inc. in Brussels. In August of 1978, MSA opened a branch office in Sydney, Australia to market and support MSA systems in Australia and New Zealand. In 1979, MSA formed MSA (Management Science America) Limited with an office in Slough, England to represent and support MSA systems in the United Kingdom. Today MSA has 5,500 customers on five continents.
- MSA has had six consecutive profitable years during which revenues have grown at a compounded growth rate of 45%. Revenues for fiscal 1978 reached \$25.6 million, a growth of 46% over 1977 revenues of \$17.6 million.
- The table which follows details MSA's financial position for fiscal 1977 and 1978.

MSA
FINANCIAL SUMMARY
(\$Thousand, Except Per Share)

ITEM \ FISCAL YEAR	1978	1977	% GROWTH
Total Revenues	\$ 25.65M	\$ 17.56M	46.0%
Net Income	.97M	.77M	26.3%
Per Share	\$ 1.31	\$ 1.02	28.4%
Number of Shares			
Outstanding	762,985	757,985	0.1%
Long Term Debt	0	0	.0
Stockholders Equity	\$ 5.22M	\$ 4.26M	22.5%

- Management projects fiscal 1979 revenues of \$32.5 million, a 27% increase over fiscal 1978. Fiscal 1980 revenues are expected to increase another 15% to \$37.5 million.

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA, INC.

- There were 500 employees at MSA in 1978. MSA management projects there will be 575 by fiscal year end 1979 and 675 by fiscal year end 1980. The 1978 employee breakdown follows:

- Marketing/sales	60
- Software services/customer support	332
- Computer operations	8
- General and administrative	<u>100</u>
	500

KEY PRODUCTS AND SERVICES

- One hundred percent of MSA revenues are derived from general business software products. The company specializes in designing, constructing, enhancing and marketing financial, accounting and human resources software packages. The two most widely used products, MSA's Payroll System and the General Ledger/FICS System, have each generated in excess of \$30 million in revenues. MSA sold a total of 642 packages in 1978.
- The following table outlines MSA's product line:

PRODUCT	NUMBER OF USERS	YEAR INTRODUCED
General Ledger/FICS	960	1971
Payroll	1,000	1970
Personnel Management and Reporting System (PMRS)	400	1975
Supplies Inventory Control Purchasing (SIC&P)	175	1972
Accounts Receivable (New System Introduced)	170	1975 1978
Accounts Payable (System Replaced)	200	1972 1977
Fixed Assets Accounting System (System Replaced)	450	1971 1976
Alltax	2,100	1970
Alltax Reporter (New System)		1979
Procurement Matching System (New System)	20	1979
Financial Forecasting and Modeling (New System)	25	1978
TOTAL	5,500	

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA, INC.

- Application software offered by MSA is written in ANS COBOL and operates on IBM Systems/360, 370, 303X and 4300 series computers, and Burroughs B3500, 4700, 6700 and 6800 computers. Some systems are also offered on Honeywell, Digital Equipment Corporation, NCR, Amdahl and Univac equipment.
- General Ledger/Financial Information and Control System (GL/FICS) is an industry-independent general ledger system with specialized options for the financial industry.
 - GL is a modular system which includes subsystems for general ledger posting, budget and planning, and cost accounting. Specific applications include U.S. and foreign currency conversion, cash flow modeling, variable budgeting, corporate consolidations. Encumbrance accounting assists the government and educational institutions in the budgeting process.
 - FICS which was elected to the Datapro Software Honor Roll in 1975, is designed to assist commercial banks and thrift institutions (savings and loans, savings banks, and credit unions) with their financial reporting.
 - It includes the three general ledger modules plus modules for fund evaluation used to transfer internal bank funds, and responsibility reporting used to improve management awareness of the impact and costs of their decisions.
 - FICS operates in batch mode, although on-line inquiry and data entry enhancements are available. It is also operational under several data base management systems.
- Payroll Accounting System is an automated payroll system for calculating salaries of hourly and salaried employees, including withholding taxes, calculating and processing deductions and other earnings, printing checks, and standard and special reports.
- The payroll system operates in batch and interactive modes and may be interfaced with the MSA Personnel Management and Reporting System or any general ledger system.
- It may also be used with a variety of data base systems including DL/I, IMS, TOTAL, and IDMS.
 - Federal, state, county and city income taxes are calculated using MSA's ALLTAX software. Canadian, Federal and provincial income taxes can also be calculated and deducted.
 - Direct deposit services are available. They include deposit of all or part of the pay into bank or thrift accounts or for payment against personal or mortgage loans. Automated Clearing House (ACH) direct deposits are also handled.
 - Typical services include transaction loading and validation, payroll master file update, payroll computation, data extraction for checks and reports, check printing, report printing. Additional, optional services include time card balancing, earnings history printouts, cost and labor

distribution processing, check reconciliation, stop payment and check reversal generation.

- Personnel Management and Reporting System (PMRS) has eight optional modules built around a central data base of personnel information.
 - The central data base contains personal data, government reporting information, skills inventories, educational background, performance information, and other data for each employee. Extensive reporting facilities are available.
 - Optional modules are Benefits/ERISA, Job and Position Control, Life-to-Date History, Lost Time/Leave and Absence, Applicant Flow, Career Development and Labor Relations. Each of these modules are independent of any of the others. All work in conjunction with the central system and have extensive reporting facilities.
- Supplies Inventory Control and Purchasing System (SIC&P) includes the following features: open P.O. status and purchasing activity reports; inventory status, calculations, projections and control, as well as comprehensive demand history reports; on-line inquiry for inventory status and open purchase order data.
- Accounts Receivable runs in both batch and interactive modes. It has an automatic interface with MSA's GL/FICS system and multiple capabilities. It includes the following features:
 - Automatic cash application.
 - Balance forward and open item processing.
 - Automatic finance charge computation and posting.
 - Deduction audits.
 - Aged trial balance reports.
 - Cash forecasting on a daily basis.
 - Customer statement printing.
 - Collection letter and message generation.
 - Daily exception reports for the credit department.
 - Customer status reports.
 - Automated collection correspondence.
- Accounts payable, which can be interfaced with a variety of general ledger software packages, includes the following features:
 - Aged trial balance.
 - Posting of variances between standard and purchase costs.
 - A variety of payment types and schedules.
 - Five years of vendor history.
 - Ongoing tax calculations and records.
 - Expense distributions, reimbursements, and tracking of standing advances.
 - A variety of check writing capabilities.
 - Check reconciliation (optional).

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA, INC.

- Projects cash applications and provides bank requirements register.
- The Fixed Assets Accounting System calculates and records depreciation schedules and property and insurance control functions for a variety of fixed business assets (building, machines, etc.). Features are: Reports which conform to Asset Depreciation Range (ADR) and Class Life System (CLS) specifications; a recent enhancement of an SEC replacement cost module. The Fixed Assets Accounting System interfaces with GL/FICS.
- ALLTAX was developed by Management Information Services (MIS) which MSA acquired in 1974. On the Datapro Software Honor Roll for six consecutive years (1973-1978), ALLTAX calculates current and federal, state, city and county withholding taxes as well as disability, FICA, FUI and SUI. It is written in COBOL and has been installed on IBM System/360, System/370 and System/3; Burroughs B1400, B2500 and B6500; Honeywell Series 200, 400, 600, 2000 and 6000; NCR Centry Series, Univac 1100, 70 and 9400 Series; and Control Data and DEC computers.
- The ALLTAX REPORTER is a companion product to MSA's Alltax System. The REPORTER furnishes payroll reports on continuous paper forms and/or on magnetic tape for the U.S. government, the Canadian government, and individual states, territories, and local tax jurisdictions. It is a COBOL subsystem that interfaces with most payroll systems. The REPORTER derives information required for reports from the user's payroll files and converts a user's code structure as required.
- Financial Forecasting and Modeling is an integrated, user-oriented system which provides all the tools for modeling, forecasting and "What If?" analysis through a modeling language, a data base, advanced modeling and forecasting techniques and a report generator. It includes the following features: Time series analysis and curve fitting; automatic seasonal adjustment; regression analysis; sensitivity and risk analysis.
- Procurement Matching provides a basic paper matching function which includes the means to integrate the inventory, purchasing, receiving and account payable functions of MSA's systems. Requisitions, purchase orders, receipts and invoices may be entered directly into the Procurement Matching Module. During the matching process, user-specified tolerances are examined, thereby eliminating the need for manual examination of those items that fall within user defined acceptable limits. Procurement Matching reduces the need for redundant data entry and verification. It deletes and calculates purchase price variances as they occur and books the variances to MSA's General Ledger System.

INDUSTRY MARKETS MSA's 5,500 customers are distributed throughout many industries with major concentration in manufacturing (15%), banking and finance (10%) medical/hospital (10%), government (12%), and services (13%). There is also concentration in the areas of insurance, education, airlines, transportation and utilities.

GEOGRAPHIC MARKETS

- Customers are concentrated in metropolitan regions of the U.S., with slight concentrations in the Northeast region. There are also approximately 150 users in Canada, 28 in Europe, and 22 in Australasia.
- Revenues were distributed geographically in 1978 as follows:

- Northeast	26%
- Midwest	19
- Southern	27
- Western	21
- Canada	4
- International	<u>3</u>
	100%
- MSA's Corporate Headquarters is located in Atlanta. Regional offices are located in Chicago, Los Angeles, Atlanta and Englewood Cliffs (NJ). District offices are located in Boston, Columbus (Ohio), Houston, San Francisco, Philadelphia, Seattle and Washington, DC. Canadian offices are located in Toronto, Montreal and Calgary.

COMPUTER HARDWARE AND SOFTWARE

- MSA leases one IBM System/370 Model 158 using VM to run OS-VSI and DOS-VS for testing and development of its products.
- MSA has purchased CICS, IMS, TAPS and EDOS software products. MSA also has the right to use ADABAS, IDMS and DATACOM/DC for testing purposes.

William Bill Goodnow, VP - client
cc. Marjorie Kimbrough

COMPANY HIGHLIGHT

MANAGEMENT SCIENCE AMERICA, INC.
3445 Peachtree Road, NE
Atlanta, GA 30326
(404) 262-2376

John P. Imlay, Jr., President
Private Corporation, employee owned
Total employees: 300
Total revenues, fiscal year
end 11/30/76: \$12,304,354

THE COMPANY

- Management Science America, Inc. (MSA) was founded in 1963 by a group of Georgia Institute of Technology graduates. It offered research, consulting, and contract programming. In the late 1960s, MSA became one of the first companies to offer packaged applications software as its sole business endeavor. Now MSA has 2,600 customers on five continents.
- Although the company declared bankruptcy under Chapter X in 1971, it has now been profitable since 1972. Revenues for fiscal 1976 reached \$12.3 million; \$1.4 million more than had been projected by management. Pretax earnings, at \$1.65 million, were more than 60% higher than management projections. Fiscal 1976 revenues and net earnings represent an annual average growth of 41.4% and 29.8% over fiscal 1973 revenues (\$4.4 million) and net earnings (\$377,728), respectively. The table below details MSA's improved financial position for fiscal 1975 and 1976.

ITEM	FISCAL 1976	FISCAL 1975	% GROWTH (DECLINE)
Total Revenues	\$12.30 M	\$ 7.92 M	55.3%
Net Income	0.83 M	0.54 M	54.2%
Per Share: Net Income	\$ 1.08	\$ 0.72	50.0%
Number of Shares Outstanding	776,480	772,286	0.5%
Long Term Debt	\$ 1.25 M	\$ 1.76 M	(29.0%)
Stockholders Equity	3.54 M	2.10 M	68.6%

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA, INC.

- Management projects fiscal 1977 revenues of \$16 million, a 21% increase over fiscal 1976. Fiscal 1978 revenues are expected to increase another 25% to \$20 million. Employees will number 310 by fiscal year end 1977 and a projected 375 by fiscal year end 1978.

KEY PRODUCTS AND SERVICES

- All MSA revenues are derived from general business software products. The company specializes in designing, developing, and marketing financial and accounting software packages. The two most used products, MSA Payroll System and MSA General Ledger/FICS System, have each generated in excess of \$20 million in revenues. The following table outlines MSA's product line:

PRODUCT	NO. OF USERS	YEAR INTRODUCED
General Ledger/FICS	600	1971
Payroll	600	1970
Personnel Management	150	1975
Supplies Inventory	100	1972
Accounts Receivable	100	1972
Accounts Payable	170	1972
(new system)	-	(1977)
Fixed Assets	230	1971
(new system)	-	(1976)
ALLTAX	1500	1970

- The applications software which MSA offers is written in ANS COBOL and operates on IBM System 360 and 370 computers and Burroughs B3500, 4700, and 6700 computers. Some systems are also offered on Honeywell, DEC, NCR, and Amdahl; there have been some conversions to Univac and CDC equipment.
- General Ledger/Financial Information and Control System (GL/FICS) is an industry-independent general ledger system with specialized options for the financial industry.
 - GL is a modular system which includes modules for general ledger posting, budget and planning, and cost accounting. Specific applications include U.S. and foreign currency conversion, cash flow modeling, variable budgeting, corporate consolidations. Encumbrance accounting assists the government and educational institutions in the budgeting process.

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA, INC.

- FICS is designed to assist commercial banks and thrift institutions (savings and loans, savings banks, and credit unions) with their financial reporting. It includes the three general ledger modules plus modules for fund evaluation used to transfer internal bank funds, and responsibility reporting used to improve management awareness of the impact and costs of their decisions.
- The FICS package has been elected to the Datapro Software Honor Roll.
- It is basically a batch mode software product although on-line inquiry and data entry enhancements are available. It is also operational under several data base management systems.
- Payroll Accounting System is an automated payroll system for calculating salaries of hourly and salaried employees. It withholds taxes, calculates and processes deductions and other earnings, and prints checks and standard and special reports. MSA stresses the flexibility of the system which operates in batch and on-line modes and interfaces with both the MSA Personnel Management and Reporting System (for government reports--ERISA, OSHA, EEO) and a variety of data base systems (DL/1, IMS, TOTAL, and IDMS). It also interfaces to any general ledger system.
 - Federal, state, county, and city income taxes are calculated using MSA's ALLTAX software. Canadian provincial income taxes can also be calculated and deducted.
 - Direct deposit services are available. They include deposit of all or part of the pay into bank or thrift accounts or for payment against personal or mortgage loans. Automated Clearing House (ACH) direct deposits are also handled.
 - Typical services include transaction loading and validation, payroll master file update, payroll computation, data extraction for checks and reports, check printing, report printing. Additional, optional services include time card balancing, earnings history printouts, cost and labor distribution processing, check reconciliation, stop payment and check reversal generation, and customer service invoice printing.
- Personnel Management and Reporting System has eight optional modules built around a central data base of personnel information.
 - The central data base contains personal data, government reporting information, skills inventories, educational background, performance information, and other data for each employee. Extensive reporting facilities are available.

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA, INC.

- Optionally, ERISA Benefits, Job and Position Control, Life-to-Date History, Lost Time/Leave and Absence, Applicant Flow, Career Development, Labor Relations, and Employee Rating modules are available. Each of these modules are independent of any of the others. All work in conjunction with the central system and have extensive reporting facilities.
- Supplies Inventory and Purchasing System is an automated purchasing and inventory system. It has the following features:
 - Automated, semi-automated, and manual entry of purchase orders
 - Open P.O. status and purchasing activity reports.
 - Inventory status, calculations, projections and control, as well as comprehensive demand history reports.
 - Inventory maintenance for single or multiple locations or warehouses.
 - Automated supplies catalogue printing.
 - Supplies usage and cost reports.
 - On-line inquiry for inventory status and open purchase order data.
 - Calculates economic order quantities and minimum reorder points.
- Accounts receivable runs in both batch and on-line modes. It has an automatic interface with MSA's GL/FICS system and multiple capabilities. It includes the following features:
 - Automatic cash application
 - Balance forward and open item processing
 - Automatic finance charge computation and posting
 - Deduction audits
 - Aged trial balance reports
 - Cash forecasting on a daily basis
 - Customer statement printing
 - Collection letter and message generation
 - Daily exception reports for the credit department
 - Customer status reports
 - Automated collection correspondence
- Accounts payable, which can be interfaced with a variety of general ledger software packages, includes the following features:
 - Aged trial balance
 - Posting of variances between standard and purchase costs
 - A variety of payment types and schedules
 - Five year vendor histories
 - Ongoing tax calculations and records
 - Expense distributions, reimbursements, and tracking of standing advances

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA, INC.

- A variety of check writing capabilities
- Check reconciliation (optional)
- Projects cash applications and provides bank requirements register
- Fixed Asset/Property Accounting System calculates and records depreciation schedules and property and insurance control functions for a variety of fixed business assets (building, machines, etc.).
 - Reports conform to Asset Depreciation Range (ADR) and Class Life System (CLS) specifications.
 - Extensive data is maintained or calculated for asset depreciation encompassing up to seven sets of books.
 - The filing of corporate, federal, state, local and regulatory agency depreciation or related information is simplified.
 - A recent enhancement was the addition of an SEC replacement cost module.
 - The system interfaces with GL/FICS.
- ALLTAX was authored by Management Information Service (MIS) which MSA acquired in 1974. On the Datapro Software Honor Roll for four years, ALLTAX calculates current and projected federal, state, city, and county withholding taxes as well as disability, FICS, FUT, and SUT taxes. It is written in COBOL and has been installed on IBM System/360, System/370, and System/3; Burroughs B1400, B2500, and B6500; Honeywell Series 200, 400, 600, 2000, and 6000; NCR Century Series; Univac 1100, 70, and 9400 Series; and Control Data and DEC computers. Total memory requirement for IBM computers is 17.5K bytes.

APPLICATIONS Applications are financial accounting and human resource related in nature.

INDUSTRY MARKETS MSA's 2600 customers are distributed through many industries, with major concentration in banking and distribution, each of which represents 20% of sales. There is also concentration in the areas of manufacturing, government, and services. The balance of revenues are distributed approximately evenly among the following industries: insurance, transportation, utilities, medical/hospital, education, and hotels/restaurants.

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA, INC.

GEOGRAPHIC MARKETS

- Customers are concentrated in metropolitan regions of the U.S., with slight concentrations in the Northeast region. There are also approximately 120 users in Canada and 20 in Europe.
- Revenues have been distributed geographically in 1976-1977 as follows:

Northeast	23%
Midwest	23%
South	21%
West	21%
Canada	8%
International	4%
	<u>100%</u>

- MSA's Corporate Headquarters are located in Atlanta. Regional offices are located in Chicago, Los Angeles, Atlanta, and Englewood Cliffs (NJ), Sales offices are located in Boston, Columbus, Dallas/Ft. Worth, Houston, Philadelphia, San Francisco, Seattle, Washington (DC), Toronto, and Montreal. MSA International was opened in Brussels in August, 1977.

COMPUTER HARDWARE AND SOFTWARE

- MSA leases the in-house equipment listed below for testing and development of its products. It does not provide any external services through these machines.
 - 1 IBM System/360-50 under DOS and OS
 - 1 IBM 3272 communications processor
 - 20 Calcomp 2314 disk drives
 - 6 Calcomp 2400 tape drives
 - 2 IBM 1403 line printers
 - 6 IBM 3277 CRT terminals
- Additional testing is done on external DEC System 10; NCR Century Series; Honeywell 6000; and Burroughs B3500, B3700, and B4700 computers. MSA also has an arrangement to test via on-line access to the IBM System/370-168 facility operated by Datacrown, Inc. in Toronto.
- MSA has purchased CICS, IMS, TAPS, and EDOS software products.

INPUT CONTACT REPORT

COMPANY: <u>MSA</u>	Date: <u>6/25/80</u>	REASON FOR CONTACT	RELATING TO
NAME: _____	INPUT STAFF	<input type="checkbox"/> SALES	<input type="checkbox"/> MAS <input type="checkbox"/> SES
TITLE: _____	<u>WMS</u>	<input type="checkbox"/> INTERVIEW	<input type="checkbox"/> CAMP <input type="checkbox"/> USER
ADDRESS: _____	INIT. _____	<input checked="" type="checkbox"/> PRESENTATION	<input type="checkbox"/> FSP
_____	INIT. _____	<input type="checkbox"/> SUPPORT	<input type="checkbox"/> CUSTOM
_____	<input type="checkbox"/> PHONE	<input type="checkbox"/> OTHER	ID _____
PHONE () - _____	<input checked="" type="checkbox"/> VISIT	_____	<input checked="" type="checkbox"/> OTHER
			ID _____

DISCUSSION: ① MSA has 600 employees
 ② 360 employees are in development & maintenance
 ③ 25 of the D/M people are in quality and reliability control

BUSINESS DEVELOPMENT POTENTIAL: _____

☐ EXTRA PAGE(S) ATTACHED

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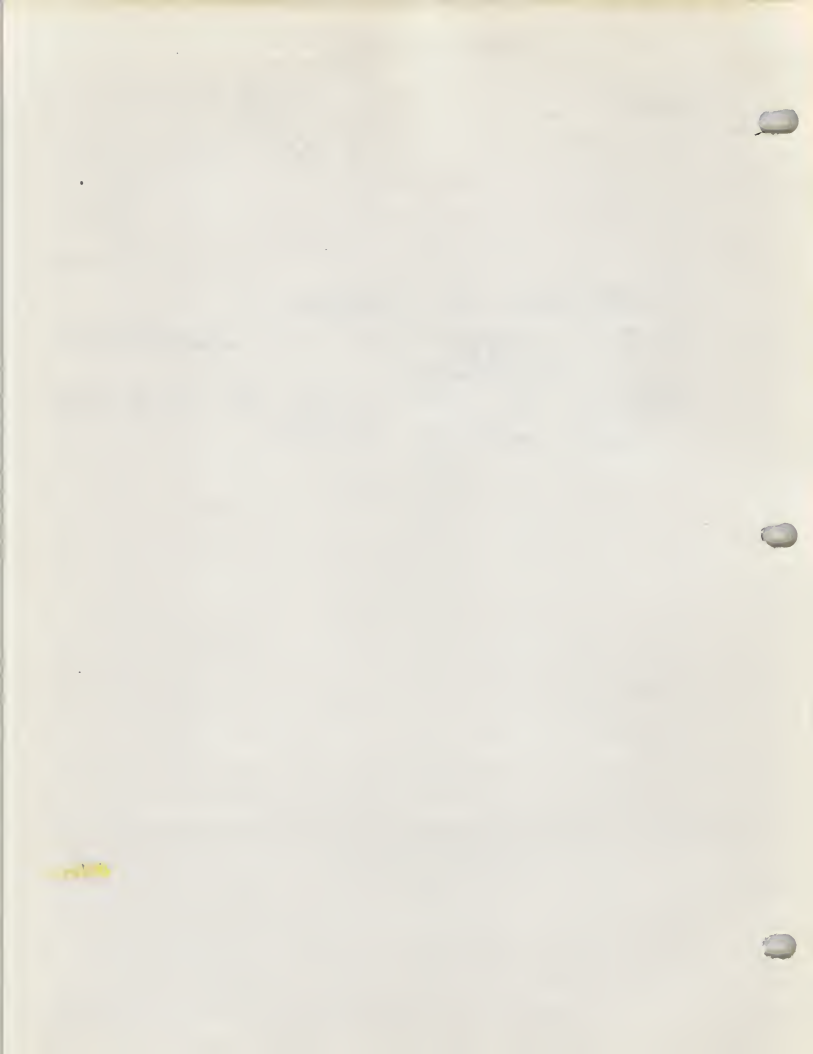
WHITE • DIST

GREEN • MARKETING
OR PROJECT

YELLOW • CONTACT

PINK • EXEC

GOLDEN ROD • ORIGINATOR



From Margorie Kumbroug, MSA
10/25

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COMPANY HIGHLIGHT

MANAGEMENT SCIENCE AMERICA, INC.
3445 Peachtree Road Northeast
Atlanta, GA 30326
(404) 262-2376

John P. Imlay, Jr. - President
Private Corporation

Total Company and Computer Service Sales
As of FY ending 11/76: \$12,304,354

NUMBER OF EMPLOYEES engaged in computer services: 290

KEY PRODUCTS/SERVICES: MSA is strictly a software products company which specializes in designing, developing, and marketing financial and accounting software products. The two best selling products, both of which have sold in excess of \$15 million, are:

MSA PAYROLL SYSTEM: (Please develop descriptions from write-ups in Annual Report or the enclosed brochure.)

MSA GENERAL LEDGER/FICS SYSTEM: (Please develop descriptions from write-ups in Annual Report or the enclosed brochure.)

Additional software products include:

MSA PERSONNEL MANAGEMENT AND REPORTING SYSTEM

MSA FICS, FINANCIAL INFORMATION AND CONTROL SYSTEM

MSA FIXED ASSET ACCOUNTING SYSTEM

MSA ACCOUNTS PAYABLE SYSTEM

MSA SUPPLIES INVENTORY CONTROL AND PURCHASING

MSA ACCOUNTS RECEIVABLE

ALLTAX

(Please develop descriptions of above systems from write-ups in the Annual Report or the enclosed brochure.)

continued

APPLICATIONS: Applications are financial and human resource related in nature.

- Payroll
- Personnel Management
- General Ledger
- Fixed Asset Accounting
- Accounts Payable
- Accounts Receivable
- Inventory Control and Purchasing

INDUSTRY MARKETS:

MSA's 2600 customers are distributed through several industries, with some concentration in banking, which represents 20% of sales. There is also some concentration in distribution and services. The balance of revenues are distributed approximately evenly among the following industries: government, insurance, manufacturing, transportation, utilities, medical/hospital, education, and hotels/restaurants.

GEOGRAPHIC MARKETS: (See Attached List)

Customers are concentrated in metropolitan regions of the U.S., with slight concentration in the Northeast region. There are also approximately some 75 users in Canada and 50 in Europe. MSA International was opened in August, 1977.

COMPUTER HARDWARE AND SOFTWARE: MSA tests its products on:
IBM 360/50 OS/DOS
DEC 10
NCR Century Series
Honeywell 6000
Burroughs 3500, 3700, 4700

OVERALL ASSESSMENT AND TRENDS

This section needs complete rewriting in light of MSA's present status. Enclosed is some material on MSA's history and a restatement of its on-going development and technological advancements. All of the revenue figures are inaccurate as of the restatement to reflect the change in accounting for maintenance service revenues adopted effective December 1, 1974. Also, Fran Tarkenton is employed by MSA in a marketing and advertising capacity. He does not direct the promotional efforts.

COMPANY HIGHLIGHT

MANAGEMENT SCIENCE AMERICA
3445 Peachtree Road Northeast
Suite 1300
Atlanta, GA 30326
(404) 262-2376

John P. Imlay, Jr., President
Private Corporation

Total Company and Computer Service Sales
as of FY ending 11/75: \$8,000,000

NUMBER OF EMPLOYEES engaged in computer services: 180

KEY PRODUCTS/SERVICES: MSA is strictly a software products company which specializes in marketing financial and accounting software products. The two best selling products, both of which have sold in excess of \$5 million, are:

- MSA Payroll System: Payroll and management reporting capabilities include flexibility in calculating taxes, deductions, earnings and banking services such as automatic deductions. Taxes are computed utilizing the ALLTAX System which is provided by subsidiary Management Information Systems. Payroll has been installed over 400 times.
- MSA General Ledger System: designed to provide control over the user's financial books, to report the financial position of the corporation and to assist in evaluating individual manager's performance in meeting financial goals of the company. The system consists of four modules: general ledger accounting, budget/responsibility reporting, cost accounting and profitability reporting. The system has been installed over 160 times since 1970.

Additional software products include:

- Personnel Management and Reporting System: closely related to the Payroll System and used in conjunction with it, the personnel system provides for comprehensive maintenance of personnel data. This product is currently the best seller.
- FICS, Financial Information and Control System: provides a means for banks to control their financial situations, managerial performance and cost/profitability of customer services. The system consists of five modules: general ledger accounting, budget planning, responsibility accounting, cost accounting and fund evaluation.

June/1976

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INPUT

COMPANY HIGHLIGHT/MANAGEMENT SCIENCE AMERICA

- MSA Fixed Asset Accounting System: provides five methods of depreciation--straight line, double declining balance, limited declining balance, sum of the year's digits and remaining life--for both corporate and tax books. It interfaces with MSA's General Ledger System. Fixed asset is the first product ever offered by MSA has it has approximately 200 users.
- MSA Accounts Payable System: maintains open-item master files of corporations, subsidiaries, vendors, invoices, account distributions, memos and payments. It automatically calculates discount amounts and distributes invoices by individual accounts.
- MSA Supplies Inventory Control and Purchasing: generates purchase orders automatically and calculates EOQ, and MRP. It also maintains full inventory status and history for multiple companies and locations.
- MSA Accounts Receivable System: permits control of receivables and automatically computes the discount.

APPLICATIONS: Applications are financial in nature:

- Payroll
- Personnel management
- General ledger
- Fixed Asset Accounting
- Accounts Payable
- Accounts Receivable
- Inventory control and purchasing

INDUSTRY MARKETS: MSA's 1800 customers are distributed through several industries, with some concentration in banking, which represents 30% of sales. There is also some concentration in government and insurance. The balance of revenues are distributed approximately evenly among the following industries: manufacturing, retail and wholesale distribution, medical/hospital, education, utilities, and transportation.

GEOGRAPHIC MARKETS: Customers are concentrated in metropolitan regions of the U.S., with slight concentration in the Northeast region. There are also approximately some 50 users in Canada and 25 in Europe. Offices are located in:

- | | |
|------------------------|---------------------|
| • Atlanta, GA | • Houston, TX |
| • Boston, MA | • Los Angeles, CA |
| • Chicago, IL | • Philadelphia, PA |
| • Englewood Cliffs, NJ | • San Francisco, CA |

The European office opened in London in 1968 but was closed about 1970 when MSA was hit by the economic recession.

June/1976

COMPANY HIGHLIGHT/ MANAGEMENT SCIENCE AMERICA

COMPUTER HARDWARE AND SOFTWARE: MSA tests its products on:
1 IBM 360/50 OS

OVERALL ASSESSMENT AND TRENDS: Founded in 1963 by a group of people from Georgia Tech, and funded by the First National Bank of Atlanta, MSA was one of the first to be founded as an operations research, consulting and software services company specializing in the textile industry. In the late '60s it was one of the first companies to move into applications software products.

Like many 'go-go' computer companies of the late 1960's, MSA was not prepared for the economic recession of 1970. In 1971 the firm entered bankruptcy under Chapter 11. Primary causes were too rapid expansion and diversification, and management inattention to cash flow. John Imlay, the current president, assumed that position in 1970 and pulled the company through bankruptcy. Bill Graves, Executive Vice President, was also largely responsible for pulling MSA through its financial problems. Additional current managers include:

• I. Sigmund Mosley Jr.,	Secretary-Treasurer
• John Arnold	Vice President
• Guy A. Colaneri	Vice President
• Don L. House	Vice President
• Peter J. Morgan	Vice President
• Howard A. Smith	Vice President
• Charles A.L. Swenson	Vice President
• Dennis V. Vohs	Vice President

In order to recover from bankruptcy, MSA eliminated the data centers, discontinued offering professional services, cut-out product development and focused on marketing a few successful products. There has been little development for several years and as a result most MSA products lack remote computing capability. On-line capability has recently been developed for accounts receivable, general ledger and payroll. More recently the firm has begun to develop new products with groups of users funding the development efforts. MSA has made a remarkable recovery and earned \$1.5 million profit before taxes last year. In 1974 revenues were \$6,211,773 and income was \$1,490,693. The firm has yet to earn back the losses caused by the 1971 bankruptcy however. The company has also made great strides toward achieving its objective of becoming employee-owned. Currently employees own 95% interest.

MSA promotes in a glamorous style, under the direction of aggressive promoter Fran Tarkenton. The firm periodically holds promotional seminars in major cities with 200 to 400 prospective users in attendance. About 25% of these become "good prospects."

The continued growth and success of MSA is dependent on their obtaining, by making or buying, new products to expand their line, and upgrading their current product line. An increased investment in development will be necessary in order to accomplish this.

June/1976

COMPANY PROFILE

MANAGER SOFTWARE PRODUCTS INC.

131 Hartwell Avenue
Lexington, MA 02173-3126
(617) 863-5800

David da Costa, President

Private Corporation

Total Employees: 200

Total Revenue, Fiscal Year End

12/31/84: \$13,200,000

THE COMPANY

- Manager Software Products was founded in the U.S. in 1977 as MSP, Inc. In January 1983 the company name was formally changed to Manager Software Products Inc. The company specializes in the development, marketing, support, and maintenance of systems software products.
- 1984 worldwide revenue reached \$13.2 million, a 31% increase over 1983 worldwide revenue of \$10.1 million. U.S. revenue was \$7.1 million in 1984, a 54% increase over U.S. revenue of \$4.6 million in 1983.
- Manager Software Products employs 200 people worldwide with 80 of the employees in the U.S.
- Major competitors include IBM, Cullinet, and TSI International Ltd. (a subsidiary of Dun & Bradstreet).

KEY PRODUCTS AND SERVICES

- One hundred percent of Manager Software Products' 1984 revenue was derived from systems software products for IBM and plug-compatible mainframes and associated maintenance fees and product training workshops.
- Manager Software Products has developed and markets the MANAGER family of six dictionary-driven integrated system software products for IBM 370, 4300, 30XX and plug-compatible mainframes under OS (VSI, MVS, MVS/XA), DOS/VSE, or VM/CMS. Current product offerings include the following:
 - CONTROLMANAGERTM, first installed in 1984, is an interactive end-user facility designed for use in conjunction with three other MANAGER-family product offerings.
 - The basic configuration provides on-line help features, automatic defaults and controls for tailoring of available functions, color screen support, multiple command recall, programmable function key support, and editing and browsing facilities.

- Options available include a full screen editor and interactive facilities for defining new commands, tailoring the environment for the user, the creating on-line documentation.
- There are currently over 1,000 installations of the system worldwide with over 450 of them in the U.S. The system is supplied in conjunction with another product offering and requires at least one of either DATAMANAGER, DESIGNMANAGER, or SOURCEMANAGER.
- DATAMANAGER[®], introduced in 1975, is a dictionary-driven data and information resource management system that indexes the contents of an information system and the relationships between its elements.
 - The basic configuration features a data definition language, interrogation capabilities, and report generating for system and program documentation. The program may be integrated with DESIGNMANAGER and SOURCEMANAGER.
 - Options are available for generating data definitions and descriptions, creating dictionary definitions from existing source programs, recording new number types and their descriptions in the dictionary, defining content and layout of reports, and applying security requirements on dictionary contents.
 - DATAMANAGER is sold in conjunction with CONTROLMANAGER and is priced from \$20,000 for OS and from \$12,000 for DOS versions. Options are priced from \$3,000 to \$5,000 depending upon operating system.
- DESIGNMANAGER^{T.M.}, introduced in September 1982, is a dictionary driven data and enterprise modeling system for logical and physical data base design that reconciles top-down and bottom-up design approaches.
 - There are currently over 100 systems installed worldwide with over 50 installed in the U.S.
 - DESIGNMANAGER is priced at \$12,000 for DOS and \$20,000 for OS versions. Optional modules are available at \$3,000 for DOS and \$5,000 for OS.
- SOURCEMANAGER^{T.M.}, introduced in the Fall of 1982, is an on-line dictionary-driven COBOL program development system supplied in conjunction with CONTROLMANAGER.
 - There are over 50 systems currently installed worldwide with five systems installed in the U.S.

MANAGER SOFTWARE PRODUCTS INC.

- The system is priced the same as DESIGNMASTER and DATA-MASTER and may be integrated with them.
- PROJECTMANAGER^{T.M.}, first installed in 1972, is a project resource and budget management system that generates progress and summary reports of all activities for tracking budgets and schedules.
 - The system is priced at \$20,000 for OS and \$12,000 for the DOS version. Source code is available for one-third the purchase price.
 - There are currently 10 installations of the system in the U.S. and over 100 worldwide.
- TESTMANAGER^{T.M.}, first installed in 1970, is a test facility for structured programs and allows individual modules of a program to be tested in batch or interactive environments.
 - The product is operating system independent and may be used with programs written in Assembler, COBOL, FORTRAN, and PL/I.
 - There are over 200 installations of the system worldwide with 10 installed in the U.S. The system sells for \$12,000 for DOS and \$20,000 for the OS version.
- Software product pricing includes documentation, training, and consulting. Basic Training Workshops are included for most systems. Maintenance fees are 12% of current sales price per year.

INDUSTRY MARKETS

- Manager Software Product's system software products are sold across all industry sectors.

GEOGRAPHIC MARKETS

- Approximately 54% of the company's 1984 revenue was derived from the U.S. and 56% from international clients.
- U.S. and Canadian offices are located in Chicago, Dallas, Seattle, Clifton (NJ), Lexington (MA), Reston (VA), Roswell (GA), and Toronto.
- International offices are located in Australia, Brazil, Denmark, Finland, Great Britain, Italy, Japan, The Netherlands, Spain, Sweden, Switzerland, and West Germany.

MANAGER SOFTWARE PRODUCTS INC.

COMPUTER HARDWARE AND SOFTWARE

- Manager Software Products has several IBM and plug-compatible mainframes installed in the London and Lexington development centers.

COMPANY HIGHLIGHT

MANAGEMENT SYSTEMS CORPORATION

125 North State Street
Salt Lake City, UT 84103
(801) 531-1122

Ray R. Hanson, President
Private Corporation
Total Employees: 80
Total Revenues, Fiscal Year End
12/31/79: \$5 million*

THE COMPANY

- Management Systems Corporation (MSC) was formed in 1969 by its parent, The Church of the Latter Day Saints, to provide external processing services within the Mountain States area. The company subsequently expanded its services to include professional services, OEM hardware sales, and recently announced a turnkey system.
- In November 1979, The Church decided to divest itself of the commercial services of MSC. The commercial business was sold to Ray R. Hanson, former Vice-President of Marketing, and other investors. Other acquisitions are planned by the new management.
- MSC's 1979 revenues will be approximately \$5 million. Management stated the company has been profitable.
- Major competitors of MSC are regional service bureaus in Utah and Idaho.

KEY PRODUCTS AND SERVICES

- Approximately 70% of MSC's total revenues are from processing services, 10% from professional services, and 20% from OEM equipment sales.
- Processing services include remote computing (60%) and batch services (40%). Approximately 50% of these revenues stem from general business applications, 10% from scientific and engineering applications, and 40% from hospital processing services. Applications available on the network are grouped as follows:
 - Business/Commercial: Financial analysis, inventory, payroll, general ledger, accounts receivable, fixed assets, accounts payable and text editing.
 - Scientific and Engineering: Electronic Circuit Analysis (ECAPL), Coordinate Geometry (COGO), Statistical analysis, Structural Analysis (STRU DL), simulation (GPSS), Calculus Development, Surveying, and Plot Formatting.

* Management Estimate

COMPANY HIGHLIGHT/MANAGEMENT SYSTEMS CORPORATION

- Health Care: Inpatient/outpatient accounting, real time admissions/discharge/transfers, census and statistic reports, accounts receivable, real time billing inquiry, departmental data entry, medical record abstracting, nursing statistics, inventory and fiscal accounting.
- Languages/DBMS: APL, BAL-Assembly, BASIC, COBOL, Easytrieve, FORTRAN, PL/I, ADABAS and DL/I.
- Other Services: Computer output microfilm and optical scanning.
- Since 1969 MSC has been providing the processing for seven hospitals owned by Intermountain Health Care. MSC will be losing these clients to a major hospital computer services vendor next year. In an attempt to recover the loss of revenue and expand its services to hospitals, MSC has developed a microbased turnkey system for small hospitals.
 - CHAMP-I is a hospital account management system which is targeted at hospitals with less than 125 beds.
 - Based on an Alpha 16 bit microprocessor, CHAMP-I provides applications for patient billing, accounts receivable, admissions/discharge/transfers, and general ledger. Accounts payable, payroll and inventory modules will be added.
 - All software operates in a real time interactive mode.
 - CHAMP-I will cost approximately \$40,000 for the basic applications and will lease for \$1,500-1,600 per month. The system operates on a standalone basis.
 - MSC is considering offering CHAMP-I on the DEC 1123.
- Professional services encompass performing feasibility studies, systems design, general programming and providing training services.
- MSC is an OEM distributor for Digital Equipment computers and word processing equipment, Microdata and Prime Computer.

INDUSTRY MARKETS Approximately 25% of MSC's current revenues come from hospitals, 5% from state government agencies, and the remainder is distributed within construction, insurance, manufacturing and other service organizations.

GEOGRAPHIC MARKETS Ninety-five percent of MSC's revenues are derived from the Mountain States, primarily Utah and Idaho. The remaining five percent comes from a few customers in scattered regions.

COMPUTER HARDWARE MSC's data center is at the headquarters' location and consists of an IBM 370/158, OS/MVS system. The network is accessed by leased or dial-up lines. MSC plans to move to a new data center in 1980.

COMPANY PROFILE

MANAGER SOFTWARE PRODUCTS

131 Hartwell Avenue
Lexington, MA 02173-3126
(617) 863-5800

David da Costa, President
Private Corporation
Total Employees: 265
Total Revenue, Fiscal Year End
12/31/88: \$23,600,000

The Company

Manager Software Products (MSP) was founded in 1966. Manager Software Products Inc is MSP's sales and support company for the Americas, with its corporate headquarters in Lexington (MA). MSP specializes in the development, marketing, support, and maintenance of the MANAGER^R family of systems software products.

MSP's total 1988 worldwide revenue reached \$23.6 million, an 18% increase over 1987 worldwide revenue of \$20 million. A five-year revenue summary follows:

MANAGER SOFTWARE PRODUCTS FIVE-YEAR REVENUE SUMMARY (\$ millions)

ITEM	FISCAL YEAR				
	1988	1987	1986	1985	1984
Revenue	\$23.6	\$20.0	\$18.7	\$15.5	\$13.2
• Percent increase from previous year	18%	7%	22%	17%	10%

The company estimates that total 1989 worldwide revenue will increase by approximately 45%.

As of December 31, 1988, MSP had approximately 265 employees, segmented as follows:

Marketing and sales	55
Customer support	30
Research and development	70
Computer operations	40
General and administrative	<u>70</u>
	265

MSP currently employs 265 people worldwide, with 100 of the employees in the U.S. In addition, MSP projects a 28% increase in personnel worldwide for 1989.

MSP's major competitors include IBM, Cullinet, CGI, Texas Instruments, KnowledgeWare, and Software AG.

Key Products and Services

Approximately 90% of MSP's 1988 revenue was derived from system software products (for IBM and plug-compatible mainframes) and 10% from associated support services, including maintenance fees and product training workshops.

MSP developed and markets the MANAGER^R family of nine dictionary-driven integrated systems software products.

MSP offers the following software products for IBM 370, 4300, 30XX, and plug-compatible mainframes under OS/VS1, MVS, MVS/XA, DOS/VSE, or VM/CMS.

- CONTROLMANAGERTM, first installed in 1984, is an interactive end-user facility designed for use in conjunction with six other MANAGER-family product offerings.
 - The basic configuration provides on-line help features, automatic defaults and controls for tailoring available functions, color screen support, multiple command recall, programmable function key support, and editing and browsing facilities.
 - Options available include a full screen editor and interactive facilities for defining new commands, tailoring the environment for the user, then creating on-line documentation.
 - There are currently more than 1,250 installations of the system worldwide, with more than 500 of them in the U.S. The system requires at least DATAMANAGER, DESIGNMANAGER, or SOURCEMANAGER.

- DATAMANAGER[®], introduced in 1975, is a dictionary-driven data and information resource management system that indexes the contents of an information system and the relationships between its elements.
 - The basic configuration features a data definition language, interrogation capabilities, and report generating for system and program documentation. The program may be integrated with DESIGNMANAGER and SOURCEMANAGER.
 - Options are available for generating data definitions and descriptions, creating dictionary definitions from existing source programs, recording new number types and their descriptions in the dictionary, defining content and layout of reports, and applying security requirements on dictionary contents.
 - DATAMANAGER is sold in conjunction with CONTROLMANAGER. There are currently 1,500 installations worldwide, with 600 of them in the U.S. Options pricing is dependent upon the operating system.
- DICTIONARYMANAGER[™], introduced in 1986, supercedes the company's DICTIONARY[™] product. It is a dictionary-driven interchange system that supports the exchange of definitions between normally incompatible multiple vendor dictionaries and directories. A significant number of DICTIONARY users have upgraded their products to DICTIONARYMANAGER.
 - The product requires and operates under CONTROLMANAGER as a fully integrated member of the MANAGER family of products.
 - There are currently more than 1,000 systems installed worldwide with more than 300 in the U.S.
- SOURCEMANAGER[™], introduced in 1982, is an on-line dictionary-driven COBOL program development system supplied in conjunction with CONTROLMANAGER. Version 02 was released in July 1988.
 - SOURCEMANAGER's key principle is the reusability of functions. Commonly used functions are automatically reused to generate on-line and batch COBOL application programs.

- There are more than 60 systems currently installed worldwide, with seven in the U.S.
- The system is priced the same as DESIGNMANAGER and DATAMANAGER and may be integrated with them.
- DESIGNMANAGER™, introduced in 1982, is a dictionary-driven data and enterprise modeling system for logical and physical data base design that reconciles top-down and bottom-up design approaches.
 - There are currently more than 200 systems installed worldwide, with more than 100 in the U.S.
 - DESIGNMANAGER optional modules are available for both DOS and OS.
- METHODMANAGER™, expected to be introduced in 1989, is a dictionary-driven automated Information Engineering methodology and support environment for the development of information systems.
 - It is a single product intended to incorporate all MANAGER-family products to form a complete Information Engineering workbench.
 - The product is a complete structured environment that automates every stage of a system's life cycle: specification, development, installation, maintenance, and enhancement of information systems.
 - It is user-definable and uses well-established approaches, including affinity analysis, functional decomposition, entity modeling, and data normalization.
 - There are still some features under development, such as project management. Beta test sites are currently testing individual tools, such as the facilities for strategic information planning.
 - METHODMANAGER optional modules are available for DOS and OS.

MSP also offers the following microcomputer software product:

- managerVIEW™, introduced in 1986, is a mouse-oriented graphics-based user interface. It provides a Computer-Aided Data and Information Engineering (CADIE) system driven by

the mainframe resident dictionary.

- This product operates on IBM PC and IBM PS/2 microcomputer workstations in order to take advantage of their interactive, full color graphics features while also integrating with other MANAGER-family products on the mainframe.
- managerVIEW operates in PC/DOS and MS/DOS environments, and is also fully integrated with Microsoft Windows Presentation Manager™ and host MANAGER products. Development is currently underway for supporting the OS/2 environment, including IBM's Presentation Manager.
- There are three possible modes of operation (defined in terms of the microcomputer's relation to the mainframe): Close-Host connectivity mode, Loose-Host connectivity mode, and Stand-Alone mode.
- There are currently more than 50 systems installed worldwide, with more than 10 in the U.S.

Software product pricing includes documentation, training, and consulting. Basic Training Workshops are included for most systems. Maintenance fees are 12% of the current purchase price per year.

Specific pricing information was declined for publication because pricing is completely dependent upon the size and type of installation.

Support services provided by MSP include: product maintenance programs, education and training, workshops, and national and regional users' groups.

Industry Markets

MSP's systems software products are sold across all industry sectors.

The company targets its software products and professional services to Fortune 5000 corporations.

MSP's major clients include banks, insurance firms, and technology research companies.

Geographic Markets

Approximately 28% of MSP's 1988 total revenue was derived from the U.S. and Canada, 61% from Europe, 5% from Japan, and 6% from the remainder of the world.

A three-year geographic source of revenue summary follows:

**MANAGER SOFTWARE PRODUCTS
THREE-YEAR GEOGRAPHIC SOURCE OF REVENUE SUMMARY
(\$ millions)**

ITEM	FISCAL YEAR					
	1988		1987		1986	
	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
U.S. & Canada	\$6.6	28%	\$6.9	34%	\$7.2	39%
Europe	14.4	61%	11.3	56%	9.3	50%
Japan	1.0	5%	0.8	4%	1.2	6%
Asia Pacific	1.1	5%	0.6	3%	0.7	4%
Other	0.5	1%	0.4	3%	0.3	1%
TOTAL	\$23.6	100%	\$20.0	100%	\$18.7	100%

MSP has U.S. regional offices in Chicago (IL); Clifton (NJ); Dallas (TX); Irvine (CA); Lexington (MA); Reston (VA); Roswell (GA); and Seattle (WA).

MSP has international offices in Australia, Austria, Brazil, Canada, Denmark, England, Finland, Holland, Italy, Japan, Spain, Sweden, Switzerland, and West Germany.

Computer Hardware and Software

MSP has the following computers installed at its development centers in support of its software development and professional services:

- IBM and compatible mainframes (London office).
- Microcomputers (development/support of managerVIEW)
- Time sharing on a mainframe owned by ITEK, which is a Division of Litton (Lexington office).

COMPANY HIGHLIGHT

MANAGER SOFTWARE PRODUCTS, INC.

131 Hartwell Avenue
Lexington, MA 02173
(617) 863-5800

David da Costa, President
Private Corporation
Total Employees: 185
Total Revenue, Fiscal Year End
12/31/82: \$12,000,000

THE COMPANY

- Manager Software Products, Inc. was founded as Management Systems and Programming Limited in England in 1966 to provide systems software consulting services. Since 1968 the company has specialized in the development, marketing, and support of systems software products.
 - The company commenced U.S. operations in 1977 as MSP, Inc. and has since maintained principal offices and product development and research centers in both the U.S. and England.
 - In January 1983 the company name was formally changed to Manager Software Products, Inc.
- 1982 revenue reached \$12 million, a 50% increase over 1981 revenue of \$8 million. Management estimates 1983 revenue will reach \$18 million.
- Manager Software Products' number of employees has remained at approximately 185 since December 1982.
- Major competitors include IBM, Cullinet, and TSI International Ltd.

KEY PRODUCTS

- One hundred percent of Manager Software Products' 1982 revenue was derived from systems software products and associated product training workshops.
- Manager Software Products has developed and markets the MANAGER family of dictionary driven integrated software products. Current product offerings include:
 - DATAMANAGER, introduced in 1975, a data dictionary designed to support data and information resource management.
 - The basic program, or nucleus, provides a data definition language for item, group, file, module, program, and system dictionary members; a command language to manipulate, interrogate, and obtain documentation from the data dictionary; and error recovery facilities.

MANAGER SOFTWARE PRODUCTS, INC.

- Optional modules are available to provide operational and functional enhancements to the nucleus in four categories: Extended-Dictionary; DBMS; Programming; and Teleprocessing.
- DATAMANAGER runs on IBM and plug compatible mainframes in batch or on-line modes.
- The DATAMANAGER nucleus is priced at \$8,100 for DOS and \$13,500 for OS versions. Optional modules are \$2,580 each for DOS and \$4,300 each for OS.
- There are currently over 1,000 systems installed.
- TESTMANAGER, first introduced in 1971 as Module Testing System (MTS), is a system for testing structured programming modules.
 - The software can be used in both batch and interactive environments and runs on IBM, ICL 1900 and 2900, and Siemens 4004 and 7.000 mainframes.
 - Prices range from \$9,900 to \$14,000.
- PROJECTMANAGER, introduced in 1972, is a batch project resource management and budgeting control system.
 - PROJECTMANAGER is written in ANSI COBOL and is available for IBM 360, 370, 4300, 303X, Burroughs 6700, Honeywell Series 60, ICL 1900 and 2900, and any mainframe using an ANSI COBOL compiler.
 - PROJECTMANAGER is priced at \$8,000.
- DESIGNMANAGER, introduced in September 1982, is a dictionary-driven interactive data and information modeling tool for automating modeling and logical data base design.
 - The software runs on IBM and plug compatible mainframes under OS and DOS.
 - The DESIGNMANAGER nucleus is priced at \$8,100 for DOS and \$13,500 for OS versions. Optional modules are \$2,580 each for DOS and \$4,300 each for OS.
- SOURCEMANAGER, introduced in the fall of 1982, is an applications development tool designed for IBM and plug compatible mainframes running under OS, DOS, and all versions of VS.
 - The software nucleus is priced at \$8,100 for DOS and \$13,500 for OS versions. Optional modules are \$2,580 each for DOS and \$4,300 each for OS.

MANAGER SOFTWARE PRODUCTS, INC.

- Software product pricing includes on-site technical training, consulting, and documentation. The perpetual license fee includes 12 months support and maintenance.
 - Subsequent support and maintenance is 12% of the current purchase price per year.
 - Additional training and consulting is available on a per man-day fee basis.
- The company has plans to introduce two additional software products in 1983.
 - CONTROLMANAGER is a dictionary driven quality assurance control tool.
 - TEXTMANAGER is a dictionary driven office automation product.
- Manager Software Products offers a series of basic training workshops to familiarize users with the functional capabilities of the MANAGER family of products.
 - The workshops are held either at the user's site or at the company's Lexington headquarters.
 - The training format consists of both lecture presentations and training at terminals.

INDUSTRY MARKETS

- Manager Software Products' systems software products are sold across all industry sectors.

GEOGRAPHIC MARKETS

- Approximately 50% of the company's 1982 revenue was derived from the U.S. and 50% from international clients.
- The company maintains product research and development centers in Lexington (MA) and London.
- U.S. sales and support offices are located in Atlanta, Chicago, Dallas, Fort Lee (NJ), Seattle, and Vienna (VA).
- Foreign offices are located in Australia, Canada, England, Finland, Italy, Japan, Malaysia, The Netherlands, Singapore, South Africa, Spain, Switzerland, and West Germany.

MANAGER SOFTWARE PRODUCTS, INC.

COMPUTER HARDWARE AND SOFTWARE

- Manager Software Products has several IBM and plug compatible mainframes installed at its Lexington and London development centers.

MANATRON, INC.

2970 South 9th Avenue
Kalamazoo, MI 49009
Phone: (616) 375-5300

President & CEO:

Allen F. Peat

Status:

Public

Stock Exchange:

NASDAQ

Total Employees:

144 (7/92)

Total Revenue:

\$10,083,930

Fiscal Year End:

4/31/92

Key Points

- Manatron, provider of systems and services to city, county, and state governments, significantly expanded its client base in March 1992 with the acquisition of Specialized Data Systems, Inc., a North Carolina-based provider of IBM PC and compatible hardware and software solutions for local governments.
- As a result of the acquisition, Manatron increased its installed base roughly 50% and increased its presence in the southeastern region of the U.S.
- In March 1992, Manatron also announced sales agreements for its GAVEL Court Management software with two Indiana counties totaling \$1.6 million.
- Manatron's products are fully compatible with the "open systems" architectures of the major computer hardware vendors, providing customers with the flexibility to choose systems that meet their requirements.

**Company
Description**

Manatron, formed in 1969, provides turnkey systems, applications software products, and processing services to city, township, county, and state government units. Manatron's systems are used primarily for court automation, financial management, property assessment and taxation, and mapping applications.

- The majority of Manatron's systems have been installed at customers' sites using the BTOS operating system and networked desktop microcomputers from Unisys.
- With the company's movement toward open systems architecture capabilities, the major Manatron systems have been developed or revised to run on multiple operating systems, such as UNIX, MS-DOS, BTOS, CTOS, and Unisys A Series systems.

Alliances

In June 1992, Manatron signed an agreement with Sony Corporation of America for Manatron to market Sony high-tech products and services to the public sector. The first of these products will be Sony (IBM-compatible) personal computers with multimedia capabilities, providing video and audio similar to existing television sets.

Manatron is a national Unisys value-added reseller to the government market and, beginning in July 1991, IBM's governmental sales force began offering Manatron's software for use on the IBM UNIX System/6000 minicomputer and PS/2 system.

During fiscal 1991, Manatron also formed a marketing alliance with First Image Management Company to market First Image's bar-coding and laser printing products to Manatron clients. Since the agreement was signed, Manatron has incorporated bar coding into its Property Tax System, and has plans to include bar coding in other systems.

Financials

Manatron's fiscal 1992 revenue was nearly \$10.1 million, a 19% increase over fiscal 1991 revenue of \$8.5 million. Net income rose 24%, from \$410,000 in fiscal 1991 to \$507,000 in fiscal 1992. A five-year financial summary follows:

**MANATRON, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)**

ITEM	FISCAL YEAR				
	4/92	4/91	4/90	4/89	4/88
Revenue	\$10,884	\$8,463	\$8,758	\$7,682	\$7,583
• Percent change from previous year	19%	(3%)	14%	1%	(16%)
Income (loss) before taxes and extraordinary items	\$755	\$622	\$423	\$137	\$(1,148)
• Percent change from previous year	21%	47%	209%	112%	(179%)
Net income (loss)	\$507	\$410	\$521	\$102	\$(728)
• Percent change from previous year	24%	(21%)	(a) 411%	114%	(189%)
Earnings (loss) per share (b)	\$0.22	\$0.18	\$0.23	\$0.05	\$(0.33)
• Percent change from previous year	22%	(22%)	360%	115%	N/A

- (a) Includes a one-time after-tax gain of \$255,000 related to the termination of Manatron's pension plan.
 (b) Restated to reflect a 5% stock dividend declared on July 9, 1992.

Manatron management attributes fiscal 1992 results to the following:

- Revenue from computer hardware and software shipments increased by 39% as a result of increases in order volume and the acquisition of Specialized Data Systems in March 1992.
- Service revenues increased only 7%, despite the continued expansion in the company's customer base and the fact that Manatron is now offering bar coding, laser printing, and microfilming services as a result of the marketing alliance with First Image Management Company. The modest increase was in part due to a reduction in revenues from tax processing services because a number of customers have been sold systems that are now used in-house.
- Revenues from sales of computer forms and supplies decreased 11% as a result of customers' no longer buying tax bills since they are being laser printed and microfilmed, as noted above.

Acquisitions

Acquisitions made by Manatron include the following:

- In March 1992, Manatron acquired Specialized Data Systems, Inc. (SDS) of Greenville (NC) for an undisclosed amount of cash and Manatron stock.
- SDS, with calendar 1991 revenue of \$2 million, provides PC-based turnkey systems for local governments, primarily in the southeastern U.S.
- During 1990, the company acquired PC-based tax and vehicle registration software developed for use in Georgia by Charter Micro Applications, Inc. of Savannah (GA).
- In 1989, Manatron acquired mainframe financial management software developed for the public sector from Lawson Associates, Inc. of Minneapolis (MN); certain assets of OASys, Inc., a computer sales and service firm based in Atlanta (GA); and mainframe property tax and appraisal software from Bryder & Associates, Inc. of Clearwater (FL).
- During 1987, the company acquired certain assets of Morse Data Processing, Inc., a governmental software supplier based in Hastings (NE).

Employees

As of July 1, 1992, Manatron had 144 employees (139 full-time and 5 part-time), segmented as follows:

Marketing and sales	25
Systems development and support	20
Customer services	67
Executive/administrative	14
Clerical and other	<u>18</u>
	144

Competitors

Competition comes primarily from small, local software developers.

Key Products and Services

INPUT estimates that over 90% of Manatron's fiscal 1992 revenue was derived from turnkey systems and associated support services and supplies. The remainder of revenue was derived from property tax bill processing services.

Manatron's turnkey systems are available for MS-DOS, UNIX, BTOS/CTOS, and Unisys A Series systems and include the following:

- LIS (Land Information System) allows governments to create and maintain their own electronic maps. Textual as well as graphic data can be displayed and analyzed.
- Property Tax Billing, Collection, and Appraisal with Mapping allows government officials to update property tax values and follow up with assessment rolls, tax rolls, tax bills, and tax distribution in conformance with applicable state laws. The system also permits processing of tax payments by reading bar codes on property tax bills.
- Utility Billing is an integrated system that supports engineering through meter reading, billing, and accounting functions. The system accommodates water, sewer, gas, electric, garbage collection, and other related services. It also permits bar code processing of utility bills.
- Soil Productivity (developed for Illinois, Indiana, and North Carolina) facilitates the maintenance and calculation of agricultural and land values.
- Building Permits with Mapping integrates graphic mapping and management with building-permit processing.
- "GAVEL" Court Management includes modules for case management, court accounting, prosecution management, probation management, jury management, child support, and voter registration.
- Financial Management is a fund-accounting system with subsystems for general ledger, accounts payable, accounts receivable, cost allocation, project accounting, requisitions and quotes, receipt processing, purchase orders, cash information management, payroll, human resources, inventory control, fixed assets, equipment and vehicle maintenance, and report writing.
- Manatron Indexing, Recording, and Retrieval System (MIRRS) records and accesses information from various types of documents, including deeds, mortgages, UCC financing statements, liens, vital records, and military discharges. MIRRS can be integrated with Manatron's imaging system for permanent storage of documents on an optical disk.

Options available for use with Manatron's turnkey systems include the following:

- Laser pens decipher bar coding and intelligent character recognition for efficient information storage and retrieval.

- VISUA-LYZ Imaging permits users to make a snapshot of a document or photograph and connect the image to the applicable data file. The system can be used by local governments to enhance property assessment records by including actual photographs of the property or improvements to the property. Other imaging applications include supplementing child support records with copies of court orders, and photos of suspects and copies of police records in support of public safety departments.
- Laser printing and microfilm capabilities are available to Manatron customers through the marketing agreement with First Image Management Company.
- XNEAR allows Unisys A Series mainframes to be linked with microcomputer workstations.

Manatron provides ongoing maintenance and customer support for its turnkey systems through client service labs.

- To respond to customer needs, Manatron has established a lab for each of its major product lines.
- There are currently 48 lab technicians who assist Manatron customers in turnkey system installation, provide technical support on-site before and after installation, and respond to customer telephone inquiries.

Manatron also provides keypunching, creation of digital maps, and the preparation or printing of property tax bills.

Industry Markets

Virtually all of Manatron's revenue is derived from state and local government. The company's customers are primarily city, township, and county governments. A small amount of revenue is derived from hardware sales and payroll processing to nongovernment clients.

Manatron currently has over 1,000 turnkey systems installed nationwide.

Geographic Markets

One hundred percent of Manatron's revenue is derived from the U.S. The company currently has customers in 39 states.

In addition to its headquarters in Kalamazoo (MI) and Greenville (NC), Manatron has offices in Atlanta (GA), Escanaba (MI), Indianapolis (IN), Kansas City (MO), and Springfield (IL).

COMPANY PROFILE

MANATRON, INC.
2970 South 9th Street
Kalamazoo, MI 49009
(616) 375-5300

Allen Peat, Chairman, President,
and CEO
Public Corporation, NASDAQ
Total Employees: 108 (7/91)
Total Revenue, Fiscal Year End
4/31/91: \$8,462,535

The Company

Manatron, Inc., formed in 1969, provides turnkey systems, application software products, and processing services primarily to city, township, and county governments.

- The majority of Manatron's systems have been installed at customers' sites using the BTOS operating system and networked desktop microcomputers from Unisys.
- With the company's movement toward open systems architecture capabilities, the major Manatron systems have been developed or revised to run on multiple operating systems, such as UNIX, MS-DOS, BTOS, CTOS, and Unisys A series systems. About 20% of fiscal 1991 software shipments were on PC/MS-DOS operating systems.
- Manatron is a national Unisys value-added reseller to the government market and, beginning in July 1991, IBM's governmental sales force began offering Manatron's software for use on the IBM UNIX System/6000 minicomputer and PS/2 system.
- During fiscal 1991, Manatron also formed a marketing alliance with First Image Management Company to market First Image's bar-coding and laser printing products to Manatron clients. Since the agreement was signed, Manatron has incorporated bar coding into its Property Tax System, and has plans to include bar coding in other systems.

Manatron's fiscal 1991 revenue was nearly \$8.5 million, a 3% decrease from \$8.8 million for fiscal 1990. Net income was \$410,344 compared to net income of \$520,558 for fiscal 1990 (which includes a one-time gain of \$386,000 (\$255,000 after taxes) associated with the termination of the company's defined-benefit pension plan. A five-year financial summary follows:

MANATRON, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)

ITEM	FISCAL YEAR				
	4/91	4/90	4/89	4/88	4/87
Revenue	\$8,463	\$8,758	\$7,682	\$7,583	\$9,000
• Percent change from previous year	(3%)	14%	1%	(16%)	N/A
Income (loss) before taxes and extraordinary items	\$622	\$423	\$137	\$(1,148)	\$1,447
• Percent change from previous year	47%	209%	112%	(179%)	N/A
Net income (loss)	\$410	\$521 (a)	\$102	\$(728)	\$820
• Percent change from previous year	(21%)	411%	114%	(189%)	N/A
Earnings (loss) per share	\$0.19	\$0.25 (a)	\$0.05	\$(0.35)	\$0.46
• Percent change from previous year	(24%)	400%	114%	(176%)	N/A

(a) Includes a one-time after tax gain of \$255,000 (\$0.12 per share) related to the termination of Manatron's pension plan.

Manatron management attributes fiscal 1991 results to the following:

- During fiscal 1991, revenues from turnkey systems declined 22% due to a reduction in order volume.
- Many of the company's potential customers were preoccupied with governmental elections during the second half of calendar 1990.
- In addition, while Manatron's movement to an open systems environment has resulted in more market opportunities, the average order amount has decreased as PC products and MS-DOS software prices decrease.
- Declines in turnkey systems sales were offset by a 13% increase in service revenues (including maintenance, training, and property tax processing) and a 9% increase in computer forms and supplies.
- When the after-tax effect of the unusual pension gain of \$255,000 or \$0.12 per share is excluded from the prior years' results, net income for fiscal 1991 actually improved by 55% or \$0.06 per share.

Revenue for the three months ending July 31, 1991 reached \$2.4 million, a 13% increase over \$2.1 million for the same period in 1990. Net income was \$107,000, compared to \$97,000 for the same period a year ago.

- Turnkey systems revenue increased 32% as a result of an increase in order volume. Manatron management attributes the results to the company's investment in open systems.
- The company's marketing relationship with First Image Management Company also contributed to revenue increases during the quarter.

Acquisitions made by Manatron include the following:

- During 1990, the company acquired PC-based tax and vehicle registration software developed for use in Georgia by Charter Micro Applications, Inc. of Savannah (GA).
- In 1989, Manatron acquired mainframe financial management software developed for the public sector from Lawson Associates, Inc. of Minneapolis (MN); certain assets of OASys, Inc., a computer sales and service firm based in Atlanta (GA); and mainframe property tax and appraisal software from Bryder & Associates, Inc. of Clearwater (FL).
- During 1987, the company acquired certain assets of Morse Data Processing, Inc., a governmental software supplier based in Hastings (NE).

As of July 1, 1991, Manatron had 108 employees (101 full-time and 7 part-time), segmented as follows:

Marketing and sales	23
Systems development and support	15
Customer services	45
Executive/administrative	11
Clerical	<u>14</u>
	108

Competition comes primarily from small, local software developers.

Key Products and Services

INPUT estimates over 90% of Manatron's fiscal 1991 revenue was derived from turnkey systems and associated support services and supplies. The remainder of revenue was derived from property tax bill processing services.

Manatron's turnkey systems are available for MS-DOS, UNIX, BTOS/CTOS, and Unisys A Series systems and include the following:

- LIS (Land Information System) allows governments to create and maintain their own electronic maps. Textual as well as graphic data can be displayed and analyzed.
- Property Tax Billing, Collection, and Appraisal with Mapping allows government officials to update property tax values and follow up with assessment rolls, tax rolls, tax bills, and tax distribution in conformance with applicable state laws. The system also permits processing of tax payments by reading bar codes on property tax bills.
- Utility Billing is an integrated system that supports engineering through meter reading, billing, and accounting functions. The system accommodates water, sewer, gas, electric, garbage collection, and other related services. It also permits barcode processing of utility bills.
- Voter Registration provides for record keeping of voter information, including township, precinct, ward, and state legislative and federal congressional districts. The system maintains voting histories, permits on-line inquiry by name, address, or I.D. number, and can generate jury selection lists from voter registration records.
- Soil Productivity (developed for Illinois, Indiana, and North Carolina) facilitates the maintenance and calculation of agricultural and land values.
- Building Permits with Mapping integrates graphic mapping and management with building-permit processing.
- "GAVEL" Court Management includes modules for child support and enforcement, jury management, case management, and court accounting.
- Financial Management is a fund-accounting system with subsystems for general ledger, accounts payable, accounts receivable, cost allocation, project accounting, requisitions and quotes, receipt processing, purchase orders, cash information management, payroll, human resources, inventory control, fixed assets, equipment and vehicle maintenance, and report writing.
- Manatron Indexing, Recording, and Retrieval System (MIRRS) records and accesses information from various types of

documents, including deeds, mortgages, UCC financing statements, liens, vital records, and military discharges. MIRRS can be integrated with Manatron's imaging system for permanent storage of documents on an optical disk.

Options available for use with Manatron's turnkey systems include the following:

- Laser pens decipher bar coding and intelligent character recognition for efficient information storage and retrieval.
- VISUA-LYZ Imaging permits users to make a snapshot of a document or photograph and connect the image to the applicable data file. The system can be used by local governments to enhance property assessment records by including actual photographs of the property or improvements to the property. Other imaging applications include supplementing child support records with copies of court orders, and photos of suspects and copies of police records in support of public safety departments.
- Laser printing and microfilm capabilities are available to Manatron customers through the marketing agreement with First Image Management Company.
- XNEAR allows Unisys A series mainframes to be linked with microcomputer workstations.

Manatron provides ongoing maintenance and customer support for its turnkey systems through client service labs.

- To respond to customer needs, Manatron has established a lab for each of its major product lines.
- There are currently 27 lab technicians who assist Manatron customers in turnkey system installation, provide technical support on-site before and after installation, and respond to customer telephone inquiries.

Manatron also provides keypunching, creation of digital maps, and the preparation or printing of property tax bills.

Industry Markets

Virtually all of Manatron's revenue is derived from state and local government. The company's customers are primarily city, township, and county governments. A small amount of revenue is derived from hardware sales and payroll processing to nongovernment clients.

Manatron currently has over 1,000 turnkey systems installed nationwide.

**Geographic
Markets**

One hundred percent of Manatron's revenue is derived from the U.S. The company currently has customers in 30 states.

In addition to its headquarters in Kalamazoo (MI), Manatron has offices in Springfield (IL), Indianapolis (IN), Kansas City (MO), Escanaba (MI), Atlanta (GA), and Berkeley (CA).

COMPANY HIGHLIGHT

MANUFACTURING DATA SYSTEMS INC.

4251 Plymouth Road
P.O. Box 986
Ann Arbor, MI 48105
(313) 995-6000

Richard A. Mohrman, General Manager
Division of Computer Aided Systems
Group of Schlumberger Technology
Corporation, a wholly owned subsidiary
of Schlumberger Ltd.
Total Employees: 677
Total Revenue, Fiscal Year End
12/31/82: \$54,500,000
Computer Services Revenue:
\$51,263,000

THE COMPANY

- Manufacturing Data Systems Inc. (MDSI), founded in 1969, provides processing services, turnkey systems, and software products to the manufacturing industry. MDSI's computer-aided manufacturing systems assist in the programming of numerically controlled machine tools and coding of manufactured product components. The company also sells peripheral computer equipment.
- On January 21, 1981, MDSI was acquired by Schlumberger Ltd. and became part of its Schlumberger Technology Corporation subsidiary. As a result, MDSI's fiscal year end was changed from August to December, and financials have been restated to conform with those of the parent.
- MDSI is one of several divisions forming Schlumberger Technology's Computer Aided Systems Group. A second division, Applicon, provides interactive turnkey systems for both computer-aided design and computer-aided manufacturing (CAD/CAM) applications. Applicon was acquired by Schlumberger in January 1982.
- 1982 revenue was \$54.5 million, a 20% decrease from 1981 revenue of \$68.3 million. A three-year revenue summary follows:

MANUFACTURING DATA SYSTEMS INC.
THREE-YEAR REVENUE SUMMARY
(\$ thousands)

ITEM	FISCAL YEAR		
	1982	1981	1980
Revenue	\$54,500	\$68,320	\$59,454
Percent increase (decrease) from previous year	(20%)	15%	N/A

MANUFACTURING DATA SYSTEMS INC.

- Management attributes the decrease in 1982 revenue to the recession and high interest rates, which have depressed capital spending by industrial companies.
- As of December 31, 1982, MDSI had 677 employees. The company currently has 549 employees.
- Major competitors of MDSI include Numerix, Computervision, Intergraph, and University Computing Company.

KEY PRODUCTS AND SERVICES

- Approximately 52% of MDSI's 1982 revenue was derived from processing services (COMPACT II), 22% from turnkey systems, and 20% from software product sales. The remaining 6% of revenue was derived from hardware-related sales, primarily intelligent terminals. A two-year summary of source of revenue follows:

<u>Product/Service</u>	1982		1981	
	<u>Percent of Total</u>	<u>Revenue (\$ millions)</u>	<u>Percent of Total</u>	<u>Revenue (\$ millions)</u>
Processing services	52%	\$28.3	53%	\$36.2
Turnkey systems	22	12.0	18	12.3
Software products	20	11.0	23	15.7
Other (primarily hardware)	<u>6</u>	<u>3.2</u>	<u>6</u>	<u>4.1</u>
Total	100%	\$54.5	100%	\$68.3

- One hundred percent of MDSI's processing service revenue is derived from COMPACT II®, a part programming language designed to prepare numerically controlled (NC) machine tool tapes.
 - The product is designed to be used on drilling, milling and turning machines, machining centers, punching, EDM (electronic discharge machines), flamecutting, and many special-purpose machines.
 - The COMPACT II processing service has 3,500 customers and over 20,000 machine tools under contract. MDSI uses the computer hardware and telecommunications network of Comshare, Inc. and Tymshare, Inc. to provide COMPACT II processing services.
 - Used on an interactive basis, COMPACT II is also sold as a software package for in-house use on IBM 360, 370, 303X, and 43XX systems running under VM/CMS. Pricing ranges from \$60,000 to \$150,000.

- Turnkey systems available from MDSI include:
 - MDSI-300, a turnkey part-programming system designed specifically for companies just beginning to use computer-assisted NC/CNC part programming.
 - The system combines COMPACT II software with a Data General NOVA minicomputer. Pricing ranges from \$20,000 to \$60,000.
 - Over 1,000 MDSI-300 systems are currently installed.
 - MDSI-400 is a turnkey part-programming system designed to offer specialized manufacturing options to maximize NC programming through COMPACT II software.
 - Features include multi-user capabilities, multi-axis machining, and extended definition capabilities.
 - Options available include RECALL, Tool and Material Data Library, Part Boundary Survey, Four Axis Plotting, and Radial Mode.
 - MDSI-400 runs on DEC PDP-11 minicomputers and has an installed base of over 500 systems. Pricing ranges from \$85,000 to \$165,000.
 - NC GRAPHICS - Series 400, introduced in March 1982, is an interactive color graphics system that replaces NC part programming with visual part processing.
 - Manufacturing engineers select elements and tool motion by indicating the desired items graphically. When selections are made, images appear on a full-color raster screen.
 - Machinery operations are simulated for each machine tool and control, without the need for postprocessors.
 - Compatible with COMPACT II, NC GRAPHICS supports the full spectrum of NC/CNC machine tools and controls.
 - The system runs on DEC VAX-11/780, 11/750, and 11/730 computers and interfaces with most CAD/CAM systems. Prices range from \$120,000 to \$200,000.
 - There are 10 NC GRAPHICS turnkey systems installed.
 - NC GRAPHICS is also sold as a software product and is available with the Applicon 4000 Series CAD system. It is priced from \$40,000.

MANUFACTURING DATA SYSTEMS INC.

- Other products previously offered by MDSI that are no longer marketed include:
 - CODE, a software package used for developing manufacturing data bases.
 - COMPACT I, the predecessor to COMPACT II.
 - COMSHOP V, a job shop management turnkey system.
 - COMDRAW IV, a two-dimensional computer-aided mechanical engineering drafting system.
 - COMCAPP, a software product providing management control of process planning. This product is being evaluated for possible reintroduction in a revised form.
- Hardware available from MDSI includes the Graphic Terminal System (GTS) and the MDSI-150 and STS Intelligent Terminal Systems, which provide a method of creating, editing, and duplicating NC tapes. They are designed to operate both as terminals for computer-assisted programming and as off-line tape preparation stations. Over 1,000 intelligent terminals have been installed.

INDUSTRY MARKETS

- MDSI's products and services are marketed exclusively to the manufacturing industry.

GEOGRAPHIC MARKETS

- U.S. sales offices are located in Atlanta, Boston, Chicago, Cincinnati, Cleveland, Dallas, Los Angeles, and Philadelphia.
- Foreign subsidiaries are located in Canada, France, Germany, Japan, Sweden, Switzerland, and the United Kingdom.

COMPUTER HARDWARE AND SOFTWARE

- MDSI maintains the following equipment at its Ann Arbor headquarters:
 - 5 DEC VAX-11/780, 750, 730s, operating under VMS.
 - 4 PDP-11s, operating under RT-11, RSX-11M.
 - 1 Data General ECLIPSE, operating under AOS.
 - 5 Data General NOVAS, with a custom operating system.
 - 2 Texas Instruments 980s, with a custom operating system.
- Under contracts with Tymshare and Comshare, MDSI has exclusive use of five Xerox 940s and related equipment connected to the commercial timesharing networks.

MANUFACTURING DATA SYSTEMS INC.

- MDSI maintains the dedicated use of two DEC KL-10Ds through agreements with ADP Network Services. MDSI uses these computers for research and development and management information purposes.



COMPANY PROFILE

MANUFACTURING DATA SYSTEMS INC.

4251 Plymouth Road
Ann Arbor, Michigan 48106
(313) 995-6000

Kenneth R. Stephanz, President
Wholly-owned Subsidiary of
Schlumberger Ltd.
Total Employees: 700
Total Revenues, Fiscal Year End
8/31/80: \$55,901,000
Computer Services Revenues:
\$50,870,000*

THE COMPANY

- Manufacturing Data Systems Inc. (MDSI), founded in 1969, provides processing services, turnkey systems and software products to the manufacturing industry. MDSI's computer aided design and manufacturing (CAD/CAM) systems assist in the programming of numerically controlled (NC) machine tools, coding of manufactured product components, job costing and estimating.
- On January 21, 1981, MDSI was acquired by Schlumberger Ltd. in a tax-free exchange of .6375 share of Schlumberger common stock for each share of MDSI common stock, valued at approximately \$222 million. MDSI will operate as a division of Schlumberger Technology Corporation, Schlumberger's wholly-owned Texas subsidiary.
- FY 1980 revenues rose 31% to \$55.9 million from \$42.5 million in FY 1979. Net income increased 26% to \$5.4 million. A five-year financial summary follows:

MANUFACTURING DATA SYSTEMS INC. FIVE-YEAR FINANCIAL SUMMARY (\$thousands, except per share data)

ITEM \ FISCAL YEAR	8/80	8/79	8/78	8/77	8/76
Revenues	\$55,901	\$42,546	\$28,797	\$22,193	\$16,292
• Percent increase from previous year	31%	48%	30%	36%	--
Income before taxes and extraordinary item	\$ 9,715	\$ 7,869	\$ 6,269	\$ 5,010	\$ 3,859
• Percent increase from previous year	23%	26%	25%	30%	--
Net income	\$ 5,423	\$ 4,295	\$ 3,258	\$ 2,440	\$ 1,747
• Percent increase from previous year	26%	32%	34%	40%	--
Earnings per share	\$ 1.77	\$ 1.40	\$ 1.08	\$ 0.82	\$ 0.64
• Percent increase from previous year	26%	30%	32%	28%	--

* INPUT estimate

MANUFACTURING DATA SYSTEMS INC.

- Research and development expenditures were \$2,573,000 and \$3,551,000 in fiscal 1979 and 1980, respectively.

- MDSI's 700 employees are segmented as follows:

Marketing/Sales	359
Software Services/Customer Support	170
Research and Engineering	66
General and Administrative	<u>105</u>
	700

KEY PRODUCTS AND SERVICES

- Approximately 57% of MDSI's FY 1980 revenues were derived from processing services (COMPACT II), 30% from turnkey systems and 4% from software product sales. The remaining 9% of revenues were derived from hardware related sales, primarily intelligent terminals and NC Graphics Plotters (Hewlett-Packard model 7221). A five-year summary of contribution to total revenue from each product category follows:

MANUFACTURING DATA SYSTEMS INC. FIVE-YEAR SUMMARY OF REVENUE SOURCES

Product/Service	Percent of Total				
	8/80	8/79	8/78	8/77	8/76
Processing Services	57%	62%	70%	72%	76%
Turnkey Systems	30	25	16	18	14
Software Products	4	3	3	3	3
Other (Primarily Hardware)	9	10	11	7	7
Total	100%	100%	100%	100%	100%

- COMPACT II is a parts programming language designed to prepare numerically controlled (NC) machine tool tapes. The COMPACT II processing service has 3,500 customers and 18,000 machines under contract. Primarily used on an interactive basis, it is occasionally sold as a software package for in-house use on IBM 360, 370, 303X and 43XX systems running under CMS. MDSI derived approximately 57% of FY 1980 revenues from COMPACT II processing services.

- MDSI uses the computer hardware and telecommunications network of Comshare, Inc., Tymshare, Inc. and ADP Network Services to provide COMPACT II interactive timesharing services.
- A new generation of COMPACT II is being developed that will permit software development in PASCAL, a language which runs on a broad cross-section of computers.
- The MDSI-300 and MDSI-400 turnkey systems, formerly called Series I and Series II, are available on the Data General NOVA 4/12 and ECLIPSE or the DEC PDP-11 minicomputers coupled with COMPACT II software. Sales of these systems contributed approximately 30% of FY 1980 revenues.
 - Approximately 400 MDSI-300 systems are currently installed. Prices range from \$25,000 to \$50,000.
 - The MDSI-400 has an installed base of over 400 systems, with prices ranging from \$60,000 to \$250,000.
- CODE is a software package used in developing a manufacturing data base which will classify and analyze parts, tools, raw materials, machines, processes and other documents. CODE sales did not contribute significantly to FY 1980 revenues.
- The MDSI-150 Intelligent Terminal System provides a method of creating, editing and duplicating NC tapes. It is designed to operate as both a terminal for computer assisted programming and as an off-line tape preparation station. Over 1,000 MDSI-150 terminals have been installed, typically selling for \$8,500 per unit.
- COMPACT I, introduced in September 1980, is a software system designed to improve the speed, accuracy and efficiency of manual NC tape preparation for applications not sufficiently complex to require full-scale computer assistance. Transition from COMPACT I to COMPACT II can be easily accomplished. Initial customer deliveries are scheduled for Spring 1981.
- COMSHOP V, introduced in May 1980, is a job shop management turnkey system providing job costing, job estimating and general accounting reports to small, independent manufacturing shops. The system uses a Data General minicomputer and sells for approximately \$73,000.
- COMDRAW IV, introduced in September 1980, is a two-dimensional computer-aided mechanical engineering drafting system. Features include standard graphics symbols, automatic cross-hatching, interactive prompting messages, layering, automatic inch-to-metric conversion and zoom/magnification capabilities. The basic COMDRAW IV system sells for approximately \$60,000.

MANUFACTURING DATA SYSTEMS INC.

- New MDSI offerings include:

- The MDSI 50, announced in February 1981, is a 30 cps table-top terminal used in conjunction with MDSI's COMPACT II processing service. The MDSI 50 provides high-speed programming capability to increase productivity and reduce overall connect line time.
- The MDSI 200, introduced in September 1980, consists of a Data General microprocessor designed for use with COMPACT II parts programming software. Combining editing commands and an NC formatter, the system can also function as a timesharing terminal. Pricing starts at \$10,000.
- MDSI's COMCAPP software provides management control of process planning. The system interactivity generates process plans from existing stored plans and process information. Primarily used on a timesharing basis, MDSI's plans include offering COMCAPP as a software package and turnkey system.

INDUSTRY MARKETS MDSI's products and services are marketed exclusively to the manufacturing industry.

GEOGRAPHIC MARKETS

- Approximately 77% of MDSI's FY 1980 revenues were derived from the United States.
 - United States sales offices are located in Albany, Atlanta, Baltimore, Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Dayton, Denver, Detroit, Grand Rapids, Hartford, Houston, Indianapolis, Kalamazoo, Kansas City, Los Angeles, Manchester, Milwaukee, Minneapolis, New York, Philadelphia, Pittsburgh, Rochester, San Francisco, Seattle, St. Louis, Tampa and Tulsa.
- Twenty-three percent of FY 1980 revenues were derived from clients in Canada, West Germany, France, The Netherlands, Sweden, Switzerland, the United Kingdom and Japan through MDSI's overseas subsidiaries.

COMPUTER HARDWARE AND SOFTWARE

- MDSI maintains the following equipment at its Ann Arbor headquarters:

- | | |
|---------------------------|----------------------------------|
| - Several DEC PDP-11s | RT-11, RSX-11M operating systems |
| - 1 DEC VAX-11/780 | VMS |
| - 2 Data General ECLIPSEs | AOS |
| - 6 Data General NOVA's | Custom operating system |
| - 1 Texas Instruments 980 | Custom operating system |

MANUFACTURING DATA SYSTEMS INC.

- Under contracts with Tymshare and Comshare, MDSI has exclusive use of five Xerox 940s and related equipment connected to the commercial timesharing networks.
- MDSI maintains the dedicated use of two and one-half DEC KL-10 Ds through agreements with ADP Network Services. MDSI uses these computers for research and development and management information purposes.



COMPANY HIGHLIGHT

MANUFACTURING DATA SYSTEMS, INC.

4251 Plymouth Road
Ann Arbor, Michigan 48105
(313) 995-6000

Kenneth R. Stephanz, President
Public Corporation
Total Employees: 500
Total Revenues, Fiscal Year End
8/31/78: \$28,797,000

THE COMPANY

- Founded in 1969, Manufacturing Data Systems, Inc. (MDSI) was organized to provide computer aided design and computer aided manufacturing (CAD/CAM) services to the manufacturing industry. Management claims MDSI is the largest supplier of NC parts programming computer services.
- Revenue for the year ended August 31, 1978 increased 30% to \$28,797,000 from \$22,193,000 in fiscal 1977.
- A five-year financial summary of MDSI is shown in the table below:

FISCAL YEAR ITEM	FIVE YEAR FINANCIAL SUMMARY, MDSI (\$ Thousand)				
	1978	1977	1976	1975	1974
Revenues	\$28,797	\$22,193	\$16,292	\$11,583	\$6,653
Income before Taxes	6,269	5,010	3,859	2,602	985
Net Earnings	3,258	2,440	1,747	1,194	943

- The 500 employees are distributed as follows:
 - Marketing
 - Domestic 155
 - International 50
 - Administrative 110
 - Research and Development 55
 - Operations Group (including software writers) 130

March 1979

COMPANY HIGHLIGHT/MANUFACTURING DATA SYSTEMS, INC.

- MDSI uses the computer hardware and telecommunications network of Tymshare, Inc., Comshare, Inc., and ADP Network Services to provide interactive timesharing services in the United States. The timesharing service agreements with these companies are due to expire at various dates over the next three years and are renewable.
- MDSI's primary competitors are General Electric Information Services and University Computing.

KEY PRODUCTS AND SERVICES

- MDSI presently offers systems for assisting the programming of numerically controlled machine tools and systems for coding and classifying manufactured product components. Approximately 70% of MDSI's revenues are derived from processing services (Compact II), 10% from software product sales, 18% from hardware products, and 2% from other services.
- COMPACT II: Parts programming language designed to prepare the numerically controlled (N/C) machine tool tapes. The COMPACT II service has 2,800 customers and 12,000 machines under contract. Seventy percent of the time it is used on an interactive (time-shared) basis. It is occasionally sold as a software package which can be tailored for in-house use on IBM 360 or 370 systems which operate under DOS, OS, TSO, or CMS.
- SERIES I and SERIES II Systems (formerly called Action Central): Turnkey systems consisting of a minicomputer and COMPACT II software.
- CODE: Software package for developing a manufacturing data base to be used to classify and analyze parts, tools, raw materials, machines, processes, and other documents.
- ST-I Intelligent Terminal: ST-I provides a method of creating, editing and duplicating NC tapes. It is designed to operate as both a terminal for computer assisted programming, and as an off-line manual tape preparation station.
- N/C Graphics Plotters.

APPLICATIONS 100% of MDSI's numerically controlled machine tool tapes have specialty application to the manufacturing industry.

INDUSTRY MARKETS Exclusively manufacturing.

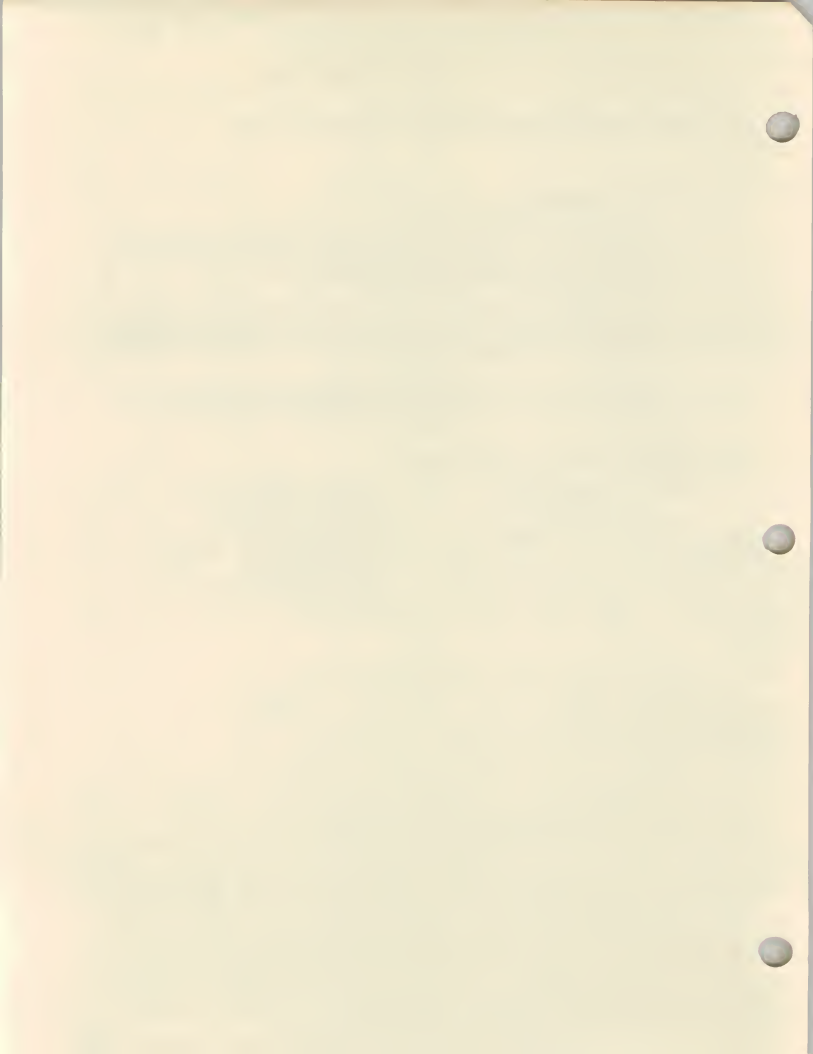
COMPANY HIGHLIGHT/MANUFACTURING DATA SYSTEMS, INC.

GEOGRAPHIC MARKETS

- MDSI clients are concentrated in the major industrial areas of the U.S. Major geographic areas are the East North Central, West North Central, New England, Middle Atlantic, Pacific, and the West South Central states. In addition, Canada accounts for 5% of its revenues.
- Sales offices are located in Atlanta, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Hartford, Houston, Indianapolis, Kalamazoo, Kansas City, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, San Francisco, Toronto.
- MDSI also provides COMPACT II to customers in the United Kingdom, France, Belgium, Switzerland, Japan and Germany through its overseas subsidiaries.

COMPUTER HARDWARE AND SOFTWARE

several	DEC PDP-11/45s	Numerous operating systems
2	DEC PDP-10s	For research and internal software development
6	Xerox XDS 940s	4 with Tymshare Tymcom-9 and 2 with Comshare Commander I operating systems
1	Texas Instruments 980	Custom operating system
1	Data General Eclipse	Custom operating system



COMPANY MDSIFY 8/31

FISCAL YEAR	ANNUAL REVENUE (\$millions)	ANNUAL GROWTH RATE (%)	COMMENTS
1971	<u> </u>	<u> </u>	
1972	<u>2</u>	<u>100</u>	
1973	<u>4</u>	<u> </u>	
1974	<u>7</u>	<u>75</u>	
1975	<u>12</u>	<u>42</u>	
1976	<u>16</u>	<u>33</u>	
1977	<u>22</u>	<u>38</u>	
1978	<div><div>27</div></div>	<div><div>58 %</div><div>23 %</div></div> <div>Previous years Average</div> <div>1977-1978</div>	
		<div><div>23 %</div><div></div></div> <div>Max Rate Projected</div> <div>Min Rate Projected</div>	
1979	<div>Max Revenue</div> <div><u>33</u></div>	<div>Min Revenue</div> <div><u> </u></div>	<div>Avg. Revenue</div> <div><u> </u></div>
1980	<div><u>40</u></div>	<div><u> </u></div>	<div><u> </u></div>
1981	<div><u>50</u></div>	<div><u> </u></div>	<div><u> </u></div>
1982	<div><u>62</u></div>	<div><u> </u></div>	<div><u> </u></div>
1983	<div><u>76</u></div>	<div><u> </u></div>	<div><u> </u></div>



John Schuman (Chief)

COMPANY HIGHLIGHT

MANUFACTURING DATA SYSTEMS, INC.

320 North Main 4251 Plymouth Rd
Ann Arbor, Michigan 48105
(313) 761-7750
995-6000

Kenneth R. Stephanz, President
Public corporation
Total and computer services
sales as of FY ending 8/75:
\$11,583,000

11/76 - 16,292,000 Fc

NUMBER OF EMPLOYEES engaged in computer services: 230

KEY PRODUCTS/SERVICES: MDSI markets computer-assisted numerical control tape preparation to manufacturing firms. COMPACT II, as the language for preparing N/C tapes is called, is made available 80% of the time on a remote computing (time-shared) basis. Occasionally it is marketed as a software product. Specific products of MDSI are as follows:

- COMPACT II: a computer language designed for preparing numerically controlled machine tool tapes and which is normally used on a time-shared basis. Occasionally it is sold as a software package for users to tailor to their in-house IBM 360 and 370 systems which operate under DOS, OS, TSO or CMS.
- ACTION CENTRAL WITH COMPACT II: a turnkey system consisting of a minicomputer and COMPACT II software.
- CODE: a software product for developing a coded data base for classifying parts, tools, raw materials, machines and processes. It is compatible with virtually every computer system on the market and is distributed by Hartec Corporation, a subsidiary of MDSI.

APPLICATIONS: Numeric control of machine tools is the only application marketed by MDSI. Subapplications of this include axes positioning, linear contouring, circular contouring, turning, milling, drilling, punching, and flame cutting.

INDUSTRY MARKETS: Exclusively manufacturing.

GEOGRAPHIC MARKETS: Users are located throughout the U.S. and Canada. Over one-third of the business is concentrated in the North Central region, with the Northeast and New England regions accounting for over a quarter of MDSI's business. The Pacific and South Central states also account for significant shares of annual sales, and Canada accounts for 5% of the business. Sales offices are located in Atlanta, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Hartford, Houston, Indianapolis, Kalamazoo, Kansas City, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, San Francisco, Toronto.

March/1976

H-10.1

INPUT

COMPANY HIGHLIGHT/MANUFACTURING DATA SYSTEMS, INC.

COMPUTER HARDWARE AND SOFTWARE:

several	DEC PDP-11/45s	numerous operating systems
1	DEC PDP-10	for test purposes only
5	Xerox XDS 940s	3 with Tymshare Tymcom-9 and
		2 with Comshare Commander I
		operating systems
several	Texas Instruments 980	custom operating system
1	Data General Eallipse	custom operating system

OVERALL ASSESSMENT AND TRENDS: MDSI has been specializing in numerically-controlled machine tool tapes for over seven years and is the largest source for these specialty services. Walter Lift Company, division of Pneumo Dynamics has been using MDSI since 1969. Improved Machinery, Inc., subsidiary of Ingersoll-Rand Co. has been a loyal user since 1972. MDSI has been using Comshare and Tymshare for its time-sharing vehicles. Until 1975 Comshare owned some MDSI stock. The company has a good technical reputation and satisfied customers. Unless MDSI develops more expertise in the marketing area however, annual sales will not exceed \$22 million by 1980.

March/1976

INPUT

H-10.2

Vendor Profile

A Publication from INPUT's Vendor Analysis Program – U.S.

September 1995

Manugistics Group, Inc.

**President, CEO
& Chairman:** William M. Gibson
2115 East Jefferson Street,
Rockville, MD 20852-4999
Phone: (301) 984-5000
Fax: (301) 984-5290

Status:	Public
Employees:	397 (2/95)
Revenue:	\$49,410,000
Fiscal Year End:	2/28/95

Key Points

- Manugistics is a provider of software and services for supply chain management. The company also markets products for personal systems.
- Manugistics' fiscal 1995 revenue was \$49.4 million, a 30% increase over fiscal 1994.
- In June 1994, Manugistics acquired FORSYS, a demand forecasting system, from a division of Marketing Systems GmbH.

- Manugistics has increased its service offerings to assist its clients in realizing maximum benefit from Manugistics software applications. These services include systems consulting, migration consulting and business process reengineering services.

Company Description

Manugistics Group, Inc. develops, markets and supports a set of business operations planning software products and services for supply chain management.

In addition to its supply chain management products, the company also markets products for use on personal systems, including STATGRAPHICS®, a software application for statistical analysis, and APL★PLUS®, a productivity programming language.

Manugistics' software and service solutions enable manufacturing, distribution and transportation companies to analyze and manage the flow of product from raw material supplier to manufacturer to supplier.

Organization and Structure

Manugistics is headquartered in Rockville (MD) and has additional North American offices in Atlanta (GA), Boston (MA), Chicago (IL), Philadelphia (PA), Los Angeles and San Francisco (CA) and Toronto (Canada).

The company's international offices are located in France, Germany and the U.K.

Manugistics was formed in 1969 as Scientific Time Sharing Corporation (STSC) to offer remote computer timesharing services.

- In 1982, STSC was acquired by Continental Telecom, Inc. (Contel) and became a wholly owned subsidiary of Contel.
- In 1984, the company was organized into two business units focusing on logistics and manufacturing; and APL and statistical software.
- In March 1986, Manugistics management purchased the company from Contel and the company became a private corporation.
- The company changed its name back to Manugistics in 1992 to reflect the focus on its software product business.

In August 1993, the company made its initial public offering of 2.4 million shares of its common stock.

Company Strategy

Manugistics' objective is to be the leading worldwide provider of supply chain management solutions. The company's strategy includes the following elements:

- Increase market share for supply chain management solutions
- Capitalize on market position
- Expand product distribution through alliances and partnering
- Provide comprehensive solutions
- Offer products for distributed, open systems incorporating standards-based technology and high-quality processes
- Design products with customers and industry leaders

Manugistics has extended its product line to include services to offer a comprehensive solution to its clients. The company has carefully positioned itself to take advantage of the trend toward client/server computing and has made selected alliances with key companies to address existing hardware platforms and relational database software.

Financials

Manugistics' fiscal 1995 revenue was \$49.4 million, a 30% increase over fiscal 1994.

- Revenue increases were attributed to new client/server applications, increased service offerings and continued growth of current software products.
- A five-year financial summary appears on the following page.

**Manugistics Group, Inc.
Five-Year Financial Summary
(\$ Millions, except per share data)**

Item	Fiscal Year				
	2/95	2/94	2/93	2/92	2/91
Revenue	\$49.4	\$38.0	\$28.3	\$30.0	\$21.3
• Percent change from previous year	30%	34%	(6%)	41%	N/A
Income (loss) before taxes	\$4.3	\$3.5	(a)	\$3.9	\$(2.0)
• Percent change from previous year	23%	70%	(100%)	295%	N/A
Net income (loss)	\$3.2	\$2.2	\$(0.3)	\$2.4	\$(3.6)
• Percent change from previous year	45%	833%	(113%)	167%	N/A
Earnings (loss) per share	\$0.31	\$0.23	\$(0.04)	\$0.28	\$(0.49)
• Percent change from previous year	35%	675%	(114%)	(157%)	N/A

Interim Results

Revenue for three months ended May 31, 1995 was \$13.5 million, a 30% increase over the revenue for the corresponding period in 1994.

- Manugistics derived 44% (\$5.9 million) of revenue from the sale of software products during the first quarter of 1995, compared to 55% (\$5.7 million) during the corresponding quarter in 1994.
- Revenue from maintenance, consulting and other services contributed 56% (\$7.5 million) to the first quarter revenue in 1995, compared to 45% (\$4.7 million) during the same period in 1994. Revenue Analysis by Product/Service

Manugistics derives revenues from licensing its software and providing product support and related services.

A three-year source of revenue summary appears on the following page.

- Approximately 50% of the company's fiscal 1995 revenue was derived from software products and the remaining 50% from maintenance, consulting and other services.
- Software products revenues for supply chain management products are recognized upon the customer's execution of a license agreement and the company's shipment of the software.
- Software products revenues for personal systems products are recognized upon the company's shipment of the software.
- Revenue from software products increased in fiscal 1995 primarily due to the increase in market demand for supply chain management software products and increased acceptance of the company's supply chain management software products, which offset decreases in revenues from personal systems software products.

- Revenue from personal systems software decreased due to increased competition and

reduced demand for the APL★PLUS.

Manugistics Group, Inc.
Three-Year Source of Revenue Summary
 (\$ Millions)

Product/Service	Fiscal Year					
	2/95		2/94		2/93	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
Supply chain management	\$19.5	39%	\$13.2	35%	\$6.2	22%
Personal systems	5.3	11%	6.4	52%	8.5	30%
Total Software Products	\$24.8	50%	\$19.6	52%	\$14.7	52%
Maintenance, consulting and other services	24.7	50%	18.4	48%	13.6	48%
Total	\$49.4	100%	\$38.0	100%	\$28.3	100%

Market Financials

Manugistics is widely used by Fortune 500 companies in the following industries:

- Chemicals and pharmaceuticals
- Consumer goods
- Food and beverages
- Industrial equipment and electronics
- Retail and food distribution
- Transportation

Geographic Markets

Approximately 81% of Manugistics' fiscal 1995 revenue was derived from North America. The remaining 19% was from other international markets.

A three-year geographic source of revenue summary follows:

Manugistics Group, Inc.
Three-Year Geographic Source of Revenue Summary
 (\$ Millions)

Geographic Market	Fiscal Year					
	2/95		2/94		2/93	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
U.S.	\$40.0	81%	\$33.1	87%	\$23.9	84%
International	9.4	19%	4.9	13%	4.4	16%
Total	\$49.4	100%	\$38.0	100%	\$28.3	100%

Employees

As of February 28, 1995, Manugistics had 397 employees, segmented as follows:

Product development.....	99
Product-related services group	112
Customer support.....	15
Computer operations.....	71
Sales and marketing	71
General and administrative.....	<u>129</u>
	397

Key Products and Services

Manugistics' software products are summarized in Exhibits A and B.

Manugistics offers an integrated suite of decision support applications that allow manufacturers, distributors, retailers and transportation companies to manage the flow of products across the supply chain, from raw materials, through the manufacturing process, to the delivery of finished goods to the consumer. By horizontally integrating the planning process across the supply chain, Manugistics clients are improving customer service, shortening operating cycles and reducing inventory levels and transportation costs.

Services

The company offers services to assist its clients in realizing maximum benefit from Manugistics software applications. These services include systems consulting, migration consulting and business process reengineering services.

Application development and implementation consulting, user education and training and

post-implementation support are now joined by the new services to offer clients a total solution for their supply chain planning requirements.

Clients

A list of selected customers includes Apple Computer, Inc., Black & Decker, Bristol-Myers Squibb Company, Chevron Chemical Company, Eastman Kodak Company, Elizabeth Arden International, S.A., Frito-Lay, Inc., Gerber Products Company, J. B. Hunt Dedicated Contract Services, Johnson & Johnson Consumer Products, Inc., Kmart Corporation, PepsiCo, Inc., Quantum Corporation, Revlon Consumer Products, Safeway Stores, Inc., SmithKline Beecham PLC, The Gillette Company, The Procter & Gamble Company and Wal-Mart Stores, Inc.

Marketing and Sales

Manugistics markets its software products through an international sales force and markets certain of its products through a worldwide network distributors. The direct sales organization focuses on sales of supply chain management software to Fortune 1000 and mid-sized companies.

Manugistics' North American sales operation, which consists of 43 sales personnel and 28 pre-sales employees, is headquartered at the company's offices in Rockville (MD) and includes field sales personnel in Atlanta, Boston, Charlotte, Chicago, Cleveland, Columbus, Dallas, Los Angeles and Philadelphia.

Exhibit A
Manugistics Supply Chain Management
Software Products

PRODUCT	DESCRIPTION	OPERATING ENVIRONMENT
LOGISTICS*PLUS	Integrated enterprise-level logistics system	IBM mainframe, midrange, PC and compatibles; DEC VAX
- FORECAST*PLUS	Demand forecasting module	
- DRPII*PLUS	Distribution resource planning module	
- MRPII*PLUS	Manufacturing and materials planning module	
- FORSYS	Demand forecasting module	
FINITE CAPACITY SCHEDULING SYSTEM	Production scheduling system for process/ repetitive manufacturers	IBM PS/2
TRUCKS	Automated routing and scheduling system for transportation management	IBM mainframe, PC and compatibles
ROUTE SALES PLANNER	Automated system to develop territories for conventional route sales operations	IBM mainframe, PC and compatible; HP; DEC; Unisys
GEOCODING SYSTEM	Automated tool for geographically mapping a territory for transportation management	IBM PCs and compatibles; HP; DEC; Unisys
VEHICLE ROUTING & SCHEDULING-COORDINATE BASED	System for dynamic routing and scheduling of vehicles in multi-stop operations for transportation management	IBM mainframe, PC and compatibles; HP; DEC; Unisys
BULK COMMODITY DISTRIBUTION	System to develop route schedules for multiple pick and drop operations in bulk commodity distribution operations	IBM mainframe, PC and compatibles; DEC VAX
ROUTE DESIGN SYSTEM*	Develops a master set of routes for pick-up and deliveries	IBM PS/2 and compatibles
CARRIER INBOUND SYSTEM	System to match freight bills against the Route Design System	IBM PS/2 and compatibles

Exhibit B

Manugistics Personal Software Products

PRODUCT	DESCRIPTION	OPERATING ENVIRONMENT
APL*PLUS	Programming language that combines application development capabilities with interactive problem solving, featuring an APL interpreter and enhancements	IBM mainframes DEC VAX/VMS HP-UX RS/6000 SUN DEC Ultrix IBM PC and compatibles
STATGRAPHICS	Fully integrated statistical graphical analysis system designed for statisticians, quality control engineers, business analysts and mathematicians providing data analysis	IBM PC, XT, AT IBM compatibles
STATGRAPHICS <i>Plus</i>	Easy-to-use menu-based statistical graphics program optimized for 386 and 486 computers. Integrates interactive presentation quality graphics with a range of statistical procedures including, descriptive statistics, regression, ANOVA, multivariate methods, experimental design, time series analysis and nonparametric methods	386/486 IBM compatible

Alliances

Some recent significant alliances formed by Manugistics are as follows:

- In 1994, Manugistics signed a joint development agreement with SAP AG to link Manugistics' supply chain management software to SAP's R/3 client/server system.
- In November 1994, Manugistics announced its agreement with Nielsen North America, to develop, sell and support a replenishment solution that is based on consumer point-of-sale (POS) data and is integrated across all areas of the supply chain—demand,

distribution, manufacturing and transportation.

- Manugistics has an agreement with Oracle Systems Corporation, to integrate the resource planning and control functionality of the Oracle manufacturing software with Manugistics' supply chain management software.
- Manugistics has formed an agreement with Price Waterhouse LLP to participate in that firm's Vendor Alliance Initiative marketing program.

Competition

Manugistics' competitors include American Software, Numetrix, SPSS Inc., SAS Institute and Think Systems, Inc.

MANUGISTICS, INC.

(formerly STSC, Inc.)
2115 East Jefferson Street
Rockville, MD 20852
Phone: (301) 984-5000
Fax: (310) 984-5094

President:	William M. Gibson
Status:	Private
Total Employees:	275
Total Revenue:	\$29,000,000
Fiscal Year End:	2/28/93

Key Points

- In 1992, Manugistics introduced new software modules for its Manugistics supply chain management software for OS/2 and HP-UX environments. This suite of applications, including modules for Demand Planning, Distribution Planning, Deployment, Materials Planning, Line Scheduling, and Transportation Planning, is a horizontally integrated decision support software for the client/server environment.
- Manugistics entered into strategic alliances with Hewlett-Packard and Digital Equipment Corporation to provide supply chain planning applications for the HP 9000 and DEC Alpha platforms.
- Manugistics also reached an agreement with Oracle Corporation to provides its applications with the ORACLE DBMS. Each pf this agreements extends Manugistics client/server product line, providing its clients with a broad range of operating environments.
- Manugistics has increased its service offerings to assist its clients in realizing maximum benefit from Manugistics software applications. These services include systems consulting, migration consulting, and business process reengineering services.

Company Description

Manugistics, Inc. develops, markets, and supports enterprisewide, operational decision support for supply chain management. The software and service solutions offered enable manufacturing, distribution, and transportation companies to analyze and manage the flow of product from raw material supplier to manufacturer to supplier.

Organization/Structure

Manugistics was formed in 1969 as Scientific Time Sharing Corporation (STSC) to offer remote computer timesharing services.

In 1982, STSC was acquired by Continental Telecom, Inc. (Contel) and became a wholly owned subsidiary of Contel.

In 1984, the company was organized into two business units focusing on (1) logistics and manufacturing and (2) APL and statistical software.

In March 1986, Manugistics management purchased the company from Contel and the company became a private corporation.

The company changed its name back to Manugistics in 1992 to reflect the focus on its software product business.

Manugistics is headquartered in Rockville, MD and has additional offices in Atlanta (GA), Boston (MA), Chicago (IL), Philadelphia (PA), Los Angeles (CA), Toronto, Canada, and Windsor (UK).

Company Strategy

Manugistics has extended their product line to include services to offer a comprehensive solution to their clients. The company has carefully positioned itself to take advantage of the trend toward client/server computing and has made selected alliances with key companies to address existing hardware platforms and relational data base software.

Financials

Manugistics' fiscal 1993 revenue was \$ 29 million.

- Manugistics' management anticipates growth of 20% to 30% annually over the next three years.
- Revenue increases are attributed to new client/server applications, increased service offerings and continued growth of current software products.

**Acquisitions/
Divestitures**

In March 1990, Manugistics acquired Rover Technology Company (Bala Cynwyd, PA) for cash and stock, expanding Manugistics' packaged and customized transportation planning software offerings.

Alliances

In fiscal 1993, Manugistics has established alliances with Digital Equipment Corporation and Hewlett-Packard, and with Kmart as a recommended supplier in their Partners in Materials Flow (PMIF) program.

In 1994, Manugistics has targeted the development of relationships with professional services firms and software and data providers such as Oracle, Information Resources Inc., and SAP America.

Employees

As of 2/28/93, Manugistics, Inc. had approximately 275 employees.

Competition

Manugistics' competitors include American Software, Innovative Computing, Numetrix, SPSS, SAS Institute, and Vocam.

**Key Products and
Services**

Manugistics derived approximately 80% of its fiscal 1993 revenue from its various application and systems software products, 20% from professional services.

Manugistics' current software products are summarized in Exhibits A and B. Manugistics currently has more than 135,300 software product installations worldwide. Manugistics offers an integrated suite of decision support applications that allow manufacturers, distributors, retailers, and transportation companies to manage the flow of product across the supply chain, from raw materials, through the manufacturing process, to the delivery of finished goods to the consumer. By horizontally integrating the planning process across the supply chain, Manugistics clients are improving customer service, shortening operating cycles, and reducing inventory levels and transportation costs.

Manugistics provides education and training, consulting, and customization professional services for all of its software products.

EXHIBIT A

MANUGISTICS SUPPLY CHAIN MANAGEMENT
SOFTWARE PRODUCTS

PRODUCT	DESCRIPTION	OPERATING ENVIRONMENT
LOGISTICS*PLUS	Integrated enterprise-level logistics system	IBM mainframe, midrange, PC, and compatibles; DEC VAX
- FORECAST*PLUS - DRPII*PLUS - MRPII*PLUS	Demand forecasting module Distribution resource planning module Manufacturing and materials planning module	
FINITE CAPACITY SCHEDULING SYSTEM	Production scheduling system for process/repetitive manufacturers	IBM PS/2
TRUCKS	Automated routing and scheduling system for transportation management	IBM mainframe, PC, and compatibles
ROUTE SALES PLANNER	Automated system to develop territories for conventional route sales operations	IBM mainframe, PC, and compatibles; HP; DEC; Unisys
GEOCODING SYSTEM	Automated tool for geographically mapping a territory for transportation management	IBM PCs and compatibles; HP; DEC; Unisys
VEHICLE ROUTING & SCHEDULING - COORDINATE BASED	System for dynamic routing and scheduling of vehicles in multi-stop operations for transportation management	IBM mainframe, PC, and compatibles; HP; DEC; Unisys
BULK COMMODITY DISTRIBUTION	System to develop route schedules for multiple pick and drop operations in bulk commodity distribution operations	IBM mainframe, PC, and compatibles; DEC VAX
ROUTE DESIGN SYSTEM*	Develops a master set of routes for pick-up and deliveries	IBM PS/2 and compatibles
CARRIER INBOUND SYSTEM	System to match freight bills against the Route Design System	IBM PS/2 and compatibles

EXHIBIT B

MANUGISTICS PERSONAL SOFTWARE PRODUCTS

PRODUCT	DESCRIPTION	OPERATING ENVIRONMENT
APL*PLUS	Programming language that combines application development capabilities with interactive problem solving, featuring an APL interpreter and enhancements	IBM Mainframes DEC VAX/VMS HP-UX RS/6000 SUN DEC Ultrix IBM PC and Compatibles
STATGRAPHICS	Fully integrated statistical graphic analysis system designed for statisticians, quality control engineers, business analysts, and mathematicians providing data analysis.	IBM PC, XT, AT IBM Compatibles
STATGRAPHICS <i>Plus</i>	Easy-to-use menu-based statistical graphics program optimized for 386 and 486 computers. Integrates interactive presentation quality graphics with a range of statistical procedures including, descriptive statistics, regression, ANOVA, multivariate methods, experimental design, time series analysis, and nonparametric methods.	386/486 IBM Compatible

Services

In 1992, Manugistics introduced new services to assist its clients in realizing maximum benefit from Manugistics software applications. These services include systems consulting, migration consulting, and business process reengineering services.

Application development and implementation consulting, user education and training, and post-implementation support are now joined by the new services to offer clients a total solution for their supply chain planning requirements.

Clients

Manugistics is widely used by Fortune 500 companies in the following industries: chemicals and pharmaceutical, consumer goods, food and beverages, industrial equipment and electronics, retail and food distribution, and transportation.

**Geographic
Markets**

Approximately 65% of Manugistics' fiscal 1992 revenue was derived from the U.S. The remaining 35% was from foreign markets.

Manugistics markets its software products through an international sales force and markets certain of its products through a worldwide network of distributors.

Vendor Profile

A Publication from INPUT's Vendor Analysis Program – U.S.

January 1997

Marcam Corporation

Chairman: Paul Margolis
President & CEO: Michael Quinlan
95 Wells Avenue
Newton, MA 02159
Phone: (617) 965-0220
Fax: (617) 965-7273
Internet: <http://www.marcam.com>

Status:	Public
Employees:	972 (1/97)
Revenue:	\$201,424,000
Fiscal Year End:	9/30/96

Key Points

- Marcam is a worldwide provider of enterprise applications software and services for process and discrete manufacturing and distribution companies using midrange and personal computers.
- In May 1996, Paul Margolis, cofounder and chairman of Marcam, announced his retirement from operating management of the company. He will continue to serve as chairman of the board. Earlier in the year,

Michael Quinlan was appointed Marcam's president and CEO.

- In July 1996, Marcam divested its Foresight Software distribution and field service software subsidiary and MXP product line in order to focus on the company's core applications.
- In September 1995, Marcam acquired all of the outstanding stock of Mapics, Inc., the developer of the MAPICS product line.
- During fiscal 1996, after a review of operating expenses and overall operations, Marcam converted direct sales operations in Latin America and Asia Pacific to affiliate distribution channels and implemented staffing reductions in many areas.

Company Description

Marcam Corporation is a worldwide provider of enterprise applications and related services to discrete and process manufacturing companies using midrange and personal computers and workstations. The company's product lines provide business planning and control solutions for production, logistics, asset management, and financial requirements. Marcam has more than 15,000 customers worldwide.

Marcam's core products include the following:

- PRISM® open enterprise application solutions for process manufacturing companies operating on the IBM AS/400
- Protean™ object-oriented applications for HP 9000, RS/6000, AS/400, and Windows NT platforms
- MAPICS® integrated enterprise resource planning solutions for the IBM AS/400
- Avantis™ asset management solutions for maintenance management and procurement

Marcam also provides implementation support, custom programming, and systems integration services for a total solution.

Operations and Structure

Marcam is organized into six business groups, including three industry business groups and three geographic business groups.

Each industry business group is based around a particular market segment to better focus its resources to address specific needs; it is responsible for all worldwide activities associated with its respective product lines, including sales and marketing, service, development, and support. Industry business groups include the following:

- *The Process ERP Business Group*, headquartered in Newton (MA), is headed by Robert Cramer, VP and General Manager. The group was formed in September 1996 with the merging of Marcam's Protean and PRISM product groups into a single, unified organization providing solutions to the process manufacturing industry worldwide.
- *The MAPICS Business Group*, based in Atlanta (GA), is headed by Richard C. Cook, SVP and General Manager, and targets the discrete manufacturing industry worldwide.
- *The Avantis Business Group*, based in Burlington, Ontario (Canada), is headed by Randy Reeve, VP and General Manager and targets the asset management industry worldwide.

Marcam's three geographic business groups are: Europe, Middle East, Africa; Asia Pacific; and Latin America. Marcam's North American sales channel reports to the General Manager of each business group.

For North American sales and marketing, Marcam maintains direct sales and support offices in the metropolitan areas of Atlanta (GA), Bala Cynwyd (PA), Burlington (Ontario, Canada), Cleveland (OH), Dallas (TX), Lisle (IL), Newton (MA), and Saddlebrook (NJ).

Marcam's headquarters for its Europe, Middle East, and Africa operations is in Paris (France). Marcam has subsidiaries in the U.K., Belgium, France, Germany, and the Netherlands. The company also has representatives in Austria, Belgium, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, the Netherlands, Poland, Portugal, Scotland, South Africa, Spain, Sweden, Switzerland, Turkey, the U.K., and the United Arab Emirates.

Asia Pacific operations are headquartered at Marcam offices in Singapore. Marcam has subsidiaries in Singapore, Hong Kong, Japan, and Australia. The operations include independent representative offices in Australia, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, the Philippines, the People's Republic of China, Singapore, Taiwan, and Thailand.

Latin American operations are headquartered at Marcam offices in Atlanta (GA). These operations include subsidiaries in Argentina and Brazil, as well as independent representative offices in Argentina, Brazil, Chile, Colombia, Guatemala, Mexico, Paraguay, Peru, and Venezuela.

Company Strategy

Marcam's primary marketing objective is to be the leading worldwide provider of enterprise applications software and services for process and discrete manufacturing companies on many platforms.

- The company's strategy is to deliver solutions that add substantial value to companies in specific markets—process and discrete manufacturing.
- Marcam believes that by creating applications that best fit the business requirements of specific markets and by offering technology choices and comprehensive services, it will maximize the business value that customers receive from its applications and services, such as reduced inventories, lower costs, better customer service, faster time to market, and more effective asset utilization.
- Since 1995, the company has decided to concentrate its efforts on its Protean, PRISM, MAPICS, and Avantis products and

discontinue investments in products no longer strategic to the company's business.

During fiscal 1996, product development focused on:

- Delivery of four additional Protean releases, adding Production, Inventory Management, Planning, and Quick Scheduler functionality, as well as enhancements to Protean Procurement and Maintenance Management applications
- For PRISM, development investments resulted in PRISM Visual Workplace, Release 4.3, Year 2000 enablement, expanded enterprise management capabilities, and new supply chain management and customer order management features.
- The MAPICS Business Group delivered the largest new release in MAPICS history, including International Financial Management enhancements, new Electronic Commerce, PDM Plus, and MAPICS Visual Workplace applications.
- The Avantis Business Group delivered Visual Workplace for Avantis.XA, Year 2000 enablement, Avantis.Pro Procurement, and French, German, and Japanese translations.

Financials

Marcam's fiscal 1996 revenue reached \$201.4 million, down slightly from fiscal 1995 revenue of \$202.3 million. Net losses were \$26.3 million, compared to net losses of \$34.4 million for the same period a year ago.

- Total revenue, excluding revenue from the MXP product line divested in June 1996, increased nearly 3% to \$190.3 million in fiscal 1996, up from \$185 million in fiscal 1995.

- In the five-year summary that follows, fiscal 1996 results include restructuring charges of \$10.6 million associated with the sale of

Foresight Software and changes made to Latin America and Asia Pacific sales operations.

Marcam Corporation
Five-Year Financial Summary
(\$ Millions, except per-share data)

Item	Fiscal Year				
	9/96	9/95	9/94	9/93	9/92
Revenue	\$201.4	\$202.3	\$172.9	\$124.3	\$98.3
• Percent change from previous year	.004%	17%	39%	26%	44%
Income (loss) before taxes	\$(21.7)	\$(31.7)	\$(1.8)	\$(14.5)	\$11.0
• Percent change from previous year	(a) 32%	(b) *	88%	(c) (232%)	120%
Net income (loss)	\$(26.3)	\$(34.4)	\$(1.0)	\$(12.7)	\$6.7
• Percent change from previous year	23%	*	92%	(290%)	86%
Earnings (loss) per share	\$(2.31)	\$(3.05)	\$(0.09)	\$(1.25)	\$0.72
• Percent change from previous year	(a) 24%	(b) *	93%	(274%)	85%

* Percent change exceeds 1,000%.

(a) Includes \$10.6 million (\$0.93 per share) in restructuring charges.

(b) Includes \$28.7 million (\$2.55 per share) in restructuring charges related to the cessation of development of the PRISM Client/Server product line.

(c) Includes in-process research and development expenses of approximately \$5.6 million associated with the MAPICS product.

Source of Revenue by Product/Service

Approximately 46% of Marcam's fiscal 1996 revenue was derived from applications software product licenses and 54% from services that include product support, software implementation, custom programming, systems integration, and educational materials and training.

- License fee revenues decreased 11% during fiscal 1996. License fee revenues, excluding revenue from the MXP product line, decreased 7% to \$86.7 million in fiscal 1996 from \$93.7 million in fiscal 1995. The decrease resulted from the decline in license

fee revenues for PRISM and Protean products, which more than offset the continued revenue growth for MAPICS products.

- Service revenues increased 11% during fiscal 1996. Service revenues, excluding revenue from MXP-related services, increased 13% to \$103.6 million. Service revenue increases occurred in all geographies and was primarily due to Marcam's consulting and support businesses as a result of growth in the installed customer base.

A three-year summary of source of revenue, which includes MXP revenue, follows:

Marcam Corporation
Three-Year Source of Revenue Summary
(\$ Millions)

Product/service	Fiscal Year					
	9/96		9/95		9/94	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
Software licenses	\$93.1	46%	\$105.2	52%	\$93.0	54%
Services	108.3	54%	97.1	48%	79.9	46%
Total	\$201.4	100%	\$202.3	100%	\$172.9	100%

Market Financials

Marcam's fiscal 1996 revenue was derived from process manufacturers in the food, chemical, consumer packaged goods, pharmaceutical, building material, and related industries.

The PRISM product line is marketed to process manufacturers in the food, chemical, consumer packaged goods, pharmaceutical, building material, and related industries. MAPICS XA is marketed to discrete manufacturing companies.

Marcam's target customers range from large multisite, multinational manufacturers to medium-sized companies with one or two sites.

Geographic Markets

Approximately 59% of Marcam's fiscal 1996 revenue was derived from the U.S., 26% from Europe, and 15% from other international sources. A three-year geographic source of revenue follows:

Marcam Corporation
Three-Year Geographic Source of Revenue Summary
(\$ Millions)

Geographic Area	Fiscal Year					
	9/96		9/95		9/94	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
U.S.	\$119.0	59%	\$113.1	56%	\$109.2	63%
Europe	52.0	26%	48.1	24%	34.0	20%
Other international	30.4	15%	41.1	20%	29.7	17%
Total	\$201.4	100%	\$202.3	100%	\$172.9	100%

Acquisitions/Divestitures

In September 1995, Marcam acquired all of the outstanding stock of Mapics, Inc., the company that developed and supported the MAPICS product line.

- As a result of the acquisition, Marcam owns all right, title, and interest in the MAPICS product line.

- Marcam acquired the exclusive marketing rights to the MAPICS product line from IBM in February 1993.

In July 1996, Marcam sold its Foresight Software subsidiary to executives of Platinum Equity Holdings. Terms of the sale were not disclosed.

- Foresight, formerly Marcam's MXP business unit, was established as an independent entity in December 1995, providing its MXP customer interaction software.
- Foresight generated approximately \$10.1 million in revenue during fiscal 1996.

Employees

As of September 30, 1996, Marcam had 963 employees (compared to 1,093 at the end of fiscal 1995).

The company currently has approximately 972 employees.

Key Products—Process Companies

Marcam offers two product lines for process manufacturing companies: PRISM and Protean.

PRISM

The PRISM product line provides AS/400-based ERP solutions for information systems, including production, logistics, maintenance management, and finance applications.

- PRISM 4.3, released in 1996, provides features that support system issues relating to the year 2000. It also offers a path for adding object technology, customer order management enhancements, enterprise manager enhancements for easier distribution of key master files, and new International Financial Management applications to address global financial business processes.

- Visual WorkPlace, a new PRISM application, improves time to value by adding a Windows client to AS/400 servers running PRISM.

- Marcam has licensed more than 5,500 PRISM modules for use at more than 1,100 sites worldwide.

Enabler modules supporting PRISM include the following:

- The Foundation module provides common functions or "enablers" used by the other PRISM applications, including ease-of-use features (such as user-defined menus and error messages) and a training database.
- The Enterprise Manager module, a key component of Marcam's announced Open Enterprise Architecture, enables users to share information across environments and applications through its business enterprise.

In February 1996, Marcam announced Visual WorkPlace for PRISM and Maintenance Management, a full Microsoft Windows graphical user interface providing desktop integration with other PC-based applications.

Protean

The Protean product line provides object-oriented, mission-critical applications for the ERP market in an open systems, client/server environment.

- Protean products are being designed to provide a complete ERP solution with enterprise-level capabilities to manage logistics, production, procurement, financial, and maintenance requirements.
- Created in an object-oriented architecture, Protean applications are designed to meet current business needs while providing the ability to adapt enterprise applications to fit

new and evolving requirements without rewriting software code.

- Protean products operate on a range of open platforms, including Windows 95, Windows NT, IBM RS/6000, HP 9000, and the Digital Alpha family of servers.

In November 1996, Marcam announced plans to deliver a tight integration of Protean with the financial applications of SAP's R/3 accounting-based ERP package.

Test Drive™, also announced in November 1996, is a program that allows potential

Protean buyers to implement and test drive/evaluate a real, working Protean implementation in the workplace or via the World Wide Web.

Marcam has a series of agreements with NEC Corporation related to the development and distribution of Protean products.

Marcam's process applications are summarized in the exhibit.

Exhibit A Marcam Process Applications

Applications/Modules		
Inventory and Production	Costing & Financials	Procurement
Inventory Management and Control	Resource Accounting	Requisition Management
Resource Management	Resource Costing	Quotation Management
Process Definition	Activity Costing	Purchase Order Management
Formula Management and Regulatory Compliance	Financial Support	Approval
Schedule Activity and Management	General Ledger	Contract Management
Quality Management	Accounts Receivable	Maintenance Management
Planning	Accounts Payable	Entity Management
Plant Planning	Order Management	Work Management
Quick Scheduler	Customer Order Management	Preventive Maintenance
Forecast Consumption	Transfer Order Management	MRO Inventory Control
	SalesTracker	Project Accounting
	Warehouse Management	Imaging

Key Products—Discrete Companies**MAPICS XA**

MAPICS XA, Marcam's ERP solution for discrete manufacturers, operates on the IBM AS/400. The product was originally introduced by IBM in 1978. MAPICS XA currently includes more than 45 software modules, an increase from 19 modules when the product was acquired by Marcam.

MAPICS XA features the following modules that provide the framework for systemwide MAPICS XA integration, support, information and analysis: Cross Application Support, Executive Information System, PowerVision, Manufacturing Performance Analysis, and Visual WorkPlace (the graphical user interface).

MAPICS XA application modules are listed in the exhibit below.

Exhibit B
Marcam MAPICS XA Applications

Applications/Modules		
Demand Management	Finite Capacity Planning and Scheduling	Maintenance Management
Customer Order Management	Operations Management	Entity Management
Market Monitoring and Analysis	Inventory Management	Work Management
Knowledge-Based Configurator	Production Control and Costing	Preventive Maintenance
Engineering Management	Repetitive Production Management	MRO Inventory Control
Product Data Management	Production Monitoring & Control	Project Accounting
PDMPlus	Purchasing	Imaging
Estimating and Quote Management	Financial Management	Business Management
Engineering Data Management Interface	International Financial Management	Visual WorkPlace
Resource Planning	General Ledger	Power Vision
Forecasting	Financial Analysis	Executive Information System
Master Production Schedule Planning	Accounts Payable	Electronic Commerce
Material Requirements Planning	Accounts Receivable	Manufacturing Performance Analysis
Capacity Requirements Planning	Payroll	Cross Application Support
	Contract Accounting	

New MAPICS XA products include:

- Electronic Commerce (EC) supports ANSI X.12 and EDIFACT standards. It manages the trading partner relationship definition, supports processing of business transactions, and provides a set of interfaces with MAPICS and external systems, including EDI, fax, and e-mail.
- Marcam has formed partnerships with vendors of interfacing applications such as EDI/400 from Premenos and Telex/FAX/400 from cma*ettworth.
- Electronic translator maps for many of the largest EDI hub vendors (Kmart, WalMart, JC Penney, etc.) may also be licensed through Marcam as part of this offering.
- Info WorkPlace strengthens the analytical and reporting capabilities of MAPICS. It allows users to access the MAPICS database to obtain information needed to monitor business trends and make business decisions.

Avantis Products

Marcam's Avantis Business Group provides asset management software to capital intensive companies. Products include the following:

- Avantis.Pro is a client/server offering that employs Marcam's Protean object-oriented technology and allows customers to change their maintenance management and procurement applications as needed, rapidly and without revising code. It operates on Microsoft's BackOffice, Intel-based PCs, Digital AlphaServer Systems, Hewlett-Packard's HP 9000, and IBM RS/6000 systems and supports databases from Oracle, Microsoft's SQL Server, and Sybase.

- Avantis.XA is an AS/400-based asset management solution with more than 800 installations in 36 countries worldwide. It offers solutions for maintenance management, repair and overhaul inventory, procurement, accounts payable, project accounting, imaging, and executive information systems.

Avantis applications include Entity Management, Work Management, Preventive Maintenance, MRO Inventory, Procurement, Project Accounting, Imaging, Approval, EDI Link, and Executive Information System.

Support Services

Marcam provides product support services for its products that consist primarily of technical assistance under annual agreements.

Marcam also offers its software customers implementation consulting, education, and applications integration services, usually on a project consulting basis.

- Marcam's implementation consulting personnel provide on-site consulting to assist customers in the installation and use of Marcam products.
- Educational materials and instruction are provided in a classroom environment and at customer sites.
- Systems and applications integration services personnel provide custom services, generally involving the connection of Marcam modules with other applications used by the customer or the development of new applications that complement Marcam's products.

In May 1996, Marcam announced In.Site, an electronic support service on the Internet's World Wide Web. Marcam's PRISM customers can access Marcam customer

support information 24 hours per day, seven days a week. The service links Internet technology with Marcam's AS/400 customer tracking system.

Clients

A representative customer list by product line follows:

- **Process**—Armstrong World Industries, Bausch and Lomb, B.F. Goodrich, Ciba Geigy, Coca-Cola USA, Engelhard Corporation, The Gillette Company, The J.R. Simplot Company, New Zealand Dairy Foods Ltd., Novo Nordisk, Rhone-Poulenc, Rohm and Haas Company, South African Breweries, Sun Chemical Group B.V., Tambrands, Warner-Lambert Company, and Wyeth-Ayerst International
- **MAPICS**—Allied Signal, B.F. Goodrich, Bayer Group, General Electric, Dynatech Communications, IBM Corporation, Mitsubishi Caterpillar Forklift America, Sanyo Audio Manufacturing, Toshiba American Consumer Products, Volvo Construction Equipment Corporation, Westinghouse Electric Corporation, and York International
- **Avantis**—Arco Chemical, Avenor, BHP Copper Co., Borden Inc., The Gillette Co., Goodyear Tire & Rubber Co., Harley-Davidson Inc., Heineken Nederland B.V., IMC-Agrico Co., Iron Ore Co. of Canada, Molson Breweries, Repap Enterprises, Rockwool-Isolation, Rohm and Haas Co., South African Breweries, Tambrands, and Wyeth-Ayerst International

Marketing and Sales

Marcam markets through its 21 direct sales and support offices and more than 150 affiliates throughout North America, Europe, Africa, the Middle East, the Asia/Pacific

region, and Latin America and is represented in more than 45 countries.

Marcam's marketing and sales organization allows the company to offer a coordinated, standard worldwide approach to multisite, multinational companies, while providing for local support of individual sites.

- Regional offices coordinate relations with large customer headquarters and manage Marcam's local offices and local country operations, which in turn market to medium-sized companies and to individual locations of larger companies.
- Most offices provide sales, consulting, and implementation assistance.

Alliances

Marcam has various agreements with IBM as follows:

- Marcam is an Authorized Industry Applications Specialist and a Premier Business Partner. As a Premier Business Partner, Marcam provides software assistance to process companies using IBM midrange computers.
- IBM also markets some Marcam products in certain areas, including Europe, Latin America, and Asia Pacific.

In April 1995, Marcam and NEC announced a working relationship that has focused additional resources on Protean product development, accelerated delivery of Protean products, and expanded the use of Protean products worldwide. The companies continue to expand their relationship through various agreements.

- Marcam and NEC have a distribution agreement under which NEC has the right to distribute Marcam's Protean products

generally to customers in Japan and to Japanese companies located outside Japan. NEC has the right to use Protean to build software for its nonmanufacturing markets and uses Protean in its systems integration and services businesses. As a result of this partnership, Marcam is increasing the size of its organization in Japan.

- Marcam and NEC also have a technology transfer agreement under which NEC has the right to use certain Protean technology within NEC in exchange for committing significant financial resources to continued investment in Protean technology.
- Marcam and NEC have formed Obtech LLC, a company that offers object integration and services in North America. Marcam has provided Protean products and object technology expertise, skills, and training; NEC has committed certain financial resources.

In October 1996, Marcam, MCI Systemhouse, Microsoft, and Digital Equipment Corporation announced an agreement to provide a complete enterprise-wide, prepartnered solution for the process manufacturing industry.

- The offering combines leading products and services from these companies, including both MCI Telecommunications and MCI Systemhouse, to provide single-point responsibility through MCI Systemhouse for business applications, technology infrastructure, communications, services, and support.
- In November 1996, Marcam and MCI Systemhouse expanded their alliance to share technology to integrate Protean with a range of applications from other vendors, including SAP.

In January 1994, Marcam announced joint development and marketing alliances with Hewlett-Packard, Oracle, Microsoft, and Informix and expanded alliances with IBM and Progress Software as part of its ongoing strategy to meet customers' multiplatform requirements. In July 1996, Marcam announced a marketing alliance with Sybase.

Marcam has also expanded its product offerings by entering into various relationships with software vendors offering complementary software applications. Such vendors include G.T.R. Data, Inc., Informix Software, Oracle Corporation, Interactive Business Information Systems, and Sysnet Computer Systems, Inc.

Marcam also has marketing agreements with Silvion Software (customer service and sales analysis products), American Custom Software (PRIME software product, marketed as the PRISM Quick Response module), and Advanced Software Design (PRISM Regulatory Compliance and Formula Management modules).

Competitors

Major competitors include System Software Associates, Datalogix, and SAP.

INPUT Assessment

Marcam's strengths include:

- A high level of recurring revenue associated with its various support services
- A strong marketing relationship with IBM
- Offering products for both the discrete and process manufacturing industries
- Offering a highly customizable product for the process manufacturing environment (PRISM). Applications for the process market often require customization to meet the specific requirements of each

manufacturer, a task that traditionally was handled by in-house staff. With PRISM's capabilities, Marcam is strategically positioned in a market that has low penetration (15% to 20%).

Marcam's challenges include:

- Increased competition in the process manufacturing software market
- Overcoming increased competition in Europe, and the soft European market

Vendor Profile

A Publication from INPUT's Vendor Analysis Program – U.S.

May 1995

Marcam Corporation

**Chairman,
President & CEO:**
95 Wells Avenue
Newton, MA 02159
Phone:
Fax:

Paul Margolis

(617) 965-0220
(617) 965-7273

Status:	Public
Employees:	965 (9/94)
Revenue:	\$ 172,876,000
Fiscal Year End:	9/30/94

Key Points

- Marcam is a worldwide provider of enterprise applications software and services for process and discrete manufacturing and distribution companies using midrange and personal computers.
- In October 1994, Marcam reorganized its management structure into three business groups—The PRISM™ and Maintenance Management Business Group, the MAPICS Business Group and the MXP (formerly MAPICS XP) Business Group—to better focus its resources to address specific

customer markets and related product and technology needs.

- In January 1994, Marcam announced PRISM Client/Server, a new release with UNIX and client/server options; new products for PRISM, MAPICS XA and MXP; and Protean™—Marcam's object technology applications for the second half of the 1990s and beyond.
- In late 1994, Marcam made deliveries of both its PRISM client/server products and object technology products for maintenance management, as scheduled.
- IBM has selected Marcam's PRISM integrated production, financial, logistics, maintenance and cost accounting software product line as the chosen software solution

for process companies using IBM midrange systems.

Company Description

Marcam Corporation is a worldwide provider of enterprise applications and related services to discrete and process manufacturing and distribution companies. The company's products provide business planning and control solutions for production, logistics, maintenance, financial, field service and sales and marketing functions. Marcam has more than 15,000 customers worldwide.

Marcam provides distinct products for different customer technology strategies—host, client/server and object technology.

- PRISM and MAPICS XA support host technology strategies implemented on the IBM AS/400.
- PRISM Client/Server and MXP products support client/server, open systems strategies implemented on the HP9000, IBM RS/6000 and Intel-based PCs.
- Protean applications offer improved user productivity and return on investment through ease-of-use, advanced function and implementation flexibility. Protean Maintenance applications have been shipping since June 1994. Protean Production applications have been shipping since December 1994 and Protean Procurement since May 1995.

Marcam also provides implementation support, custom programming and systems integration services for a total solution.

Operations and Structure

Marcam has organized its management structure into three business groups, each of which is responsible for all worldwide

activities associated with its respective product line, including sales and marketing, service, development and support.

- *The PRISM and Maintenance Management Business Group* is headed by David M. Stoner, EVP and General Manager.
- *The MAPICS Business Group* is headed by Richard C. Cook, VP and General Manager.
- *The MXP Business Group* is headed by John Campbell, EVP and General Manager.

North American operations are headquartered at Marcam's offices in Newton (MA) and include direct sales and support offices in the following metropolitan areas: Atlanta (GA); Bala Cynwyd (PA); Boston (MA); Burlington (Ontario); Chicago (IL); Cleveland (OH); Dallas (TX); Durham (NC); Eagan (MN); Irvine (CA) and West Orange (NJ).

Marcam's headquarters for its Europe, Middle East and Africa operations is in Paris (France). Marcam has subsidiaries in the U.K., Belgium, France, Germany, Spain and the Netherlands and a joint venture in the U.K. The company also has representatives in Austria, Denmark, France, Germany, Italy, the Netherlands, Portugal, South Africa, Spain, Sweden, Switzerland, Turkey, the U.K. and the United Arab Emirates.

Asia Pacific operations are headquartered at Marcam offices in Singapore. Marcam has subsidiaries in Singapore and Australia. The operations include independent representative offices in Australia, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, the Philippines, Taiwan and Thailand.

Latin American operations are headquartered at Marcam offices in Atlanta (GA). The operations include subsidiaries in Argentina

and Brazil as well as independent representative offices in Argentina, Barbados, Brazil, Chile, Columbia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Mexico, Peru and Venezuela.

Company Strategy

Marcam's primary marketing objective is to be the leading provider of enterprise applications software and services for industrial and distribution companies worldwide. The company's strategy is to deliver solutions that add substantial value to companies in specific market segments—process companies, discrete manufacturing companies and distributors.

Marcam has expanded its business to include products for discrete manufacturers and distributors in order to: provide additional revenue opportunities for additional resources to invest in application technology and worldwide services; add computer platforms to provide customers with a choice of environment; new industry-focused solutions that maintain Marcam's strategy of creating value by offering products with application functions that best fit business requirements and increasing license fee opportunities.

As part of a five-year effort, Marcam is developing new object-oriented client/server technology. Marcam has delivered applications using these technology beginning in 1994.

Marcam is committed to establishing strong business relationships with its customers, reinvesting resources in future growth, and maintaining a clearly focused development direction in support of the Computer Integrated Enterprise.

Financials

Marcam's fiscal 1994 revenue reached \$172.9 million, a 39% increase over fiscal 1993 revenue of \$124.3 million. Net losses were \$1.0 million, compared to net losses of \$12.7 million for the same period a year ago.

Marcam management attributes fiscal 1994 revenue results to the following:

- License fee revenues increased 45% to \$91.7 million primarily due to an expanded product line which led to increased licensing volume both to new customers and to existing customers for additional sites and modules and improved distribution capabilities. The expanded product line included MAPICS XA, which was acquired in February 1993, and the initial modules of Marcam's object technology products, which shipped in the third quarter of 1994.
- Service revenues increased 12% to \$61.4 million due to growth in software installations.
- MAPICS customer renewals increased 294% to \$18.5 million due to a full year of activity for 1994 compared to a partial year in 1993 and an expanded customer renewal base in 1994.

In the five-year summary on the following page, financials have been restated to reflect a change in the method of accounting for purchase of the MAPICS product from IBM in February 1993; consolidation of the operations of Marcam affiliates in Italy, Belgium and Holland; and reclassification of certain items, including research and product development expenses.

Marcam Corporation
Five-Year Financial Summary
(\$ Millions, except per share data)

Item	Fiscal Year				
	9/94	9/93	9/92	9/91	9/90
Revenue	\$172.9	\$124.3	\$98.3	\$68.2	\$50.4
• Percent change from previous year	39%	26%	44%	35%	60%
Income (loss) before taxes	\$(1.8)	\$(14.5)	\$11.0	\$5.0	\$6.5
• Percent change from previous year	88%	(a) (232%)	120%	(23%)	282%
Net income (loss)	\$(1.0)	\$(12.7)	\$6.7	\$3.6	\$4.2
• Percent change from previous year	92%	(290%)	86%	(14%)	(a) 133%
Earnings (loss) per share	\$(0.09)	\$(1.25)	\$0.72	\$0.39	\$0.51
• Percent change from previous year	93%	(274%)	85%	(24%)	132%

(a) Includes in-process research and development expenses of approximately \$5.6 million associated with the MAPICS product.

(b) Includes a \$1.1 million charge for a change in the method of revenue recognition.

Net losses were reduced substantially during fiscal 1994.

- Selling and marketing expenses were \$81.5 million, a 35% increase over \$60.3 million for fiscal 1993. The increases represent sales commissions paid to distributors and representatives, primarily related to sales of the MAPICS XA product line, the continued expansion of Marcam's worldwide direct sales organization, provisions for certain accounts receivable, expenses associated with integrating an acquired company and expenses associated with the divestiture of a European subsidiary.
- Product development, enhancements and custom programming expenses were approximately \$33.3 million (19% of revenue) in fiscal 1994, \$28.3 million (23% of revenue) in fiscal 1993 and \$17.4 million (18% of revenue) in fiscal 1992. These expenses include net royalties paid for the MAPICS product line.

- General and administrative expenses increased by \$2.5 million in fiscal 1994 due to the addition of administrative staff and the further expansion of international operations.

Interim Results

Revenue for the three months ending December 31, 1994 reached \$47.6 million, a 6% increase over \$44.8 million for the same period in 1993. Net losses were \$905,000, compared to net income of \$1.6 million for the same period a year ago. The losses were attributed to product transition in the company's PRISM business.

Market Financials

Marcam's fiscal 1994 revenue was derived from process manufacturing, discrete manufacturing and distribution companies.

The PRISM product line is marketed to process manufacturers in the food, chemical,

consumer packaged goods, pharmaceutical, building material and related industries. MAPICS XA is marketed to discrete manufacturing companies. MXP is targeted to industrial manufacturing and distribution companies.

Marcam's target customers range from large multisite, multinational manufacturers to medium-size companies with one or two sites.

Approximately 53% of Marcam's fiscal 1993 revenue was derived from applications software product licenses, 35% from maintenance and support services, 11% from MAPICS customer renewals and 1% from hardware sales. A three-year summary of source of revenue follows:

Marcam Corporation
Three-Year Source of Revenue Summary
 (\$ Millions)

Product/service	Fiscal Year					
	9/94		9/93		9/92	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
Software licenses	\$91.7	53%	\$63.2	51%	\$53.5	54%
Services	61.4	35%	54.8	44%	42.1	43%
MAPICS customer renewals (a)	18.5	11%	4.7	4%	--	--
Hardware	1.2	1%	1.5	1%	2.7	3%
Total	\$172.9	100%	\$124.3	100%	\$98.3	100%

(a) Marcam records MAPICS customer license renewal revenues as related party revenues.

Geographic Markets

Approximately 67% of Marcam's fiscal 1994 revenue was derived from North America and

33% from international sources. A three-year geographic source of revenue summary appears on the following page:

Marcam Corporation
Three-Year Geographic Source of Revenue Summary
(\$ Millions)

Geographic Area	Fiscal Year					
	9/94		9/93		9/92	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
North America	\$115.0	67%	\$74.8	60%	\$59.1	60%
International	57.9	33%	49.5	40%	39.2	40%
Total	\$172.9	100%	\$124.3	100%	\$98.3	100%

Acquisitions

In March 1994, Marcam acquired two FieldForce application software modules from Sysnet Computer Systems, Inc.

In June 1993, Marcam acquired the Varnet Group of Braintree (MA) for 900,000 shares of Marcam common stock valued at \$21.6 million.

- The acquisition expanded Marcam's offerings to include open systems products for manufacturing, distribution, financial and field service applications. The products are now marketed as the MXP product line.
- The group had revenue of \$12.9 million and net income of \$1.4 million for the fiscal year ending April 30, 1993.
- Marcam is marketing Varnet's products as its MXP product line.

In February 1993, Marcam acquired exclusive marketing rights to IBM's MAPICS product line. Marcam also manages the Mapics Inc. software development laboratory in Atlanta (GA).

- As part of the agreement, IBM received 1.615 million shares of Marcam common

stock and the right to receive additional payments based on MAPICS' performance.

- With MAPICS, Marcam added more than 13,000 licenses and, more than 100 affiliates that market and support MAPICS and provide a new channel for other Marcam products.
- In April 1993, Marcam announced a new MAPICS version called MAPICS XA that includes 11 new products and extensive enhancements.

During the fourth quarter of fiscal 1992, Marcam acquired its Australian representative to form a wholly owned subsidiary.

Employees

As of September 30, 1994, Marcam had 965 employees (compared to 1,040 at the end of fiscal 1993).

The company currently has approximately 965 employees.

Key Products--Process Companies

Marcam provides its process manufacturing applications for three distinct technology environments—host, client/server and object technology.

PRISM

PRISM provides a computing architecture, advanced communications software and application functions that enable companies to integrate multiple sites across a network of IBM AS/400 system.

- Marcam believes that the benefits to PRISM users include more efficient asset use, greater accuracy of cost information, detailed tracking of outputs, higher product yields and enhanced customer service capabilities. Unique features include resource management models, production models and activity-based cost accounting.
- Marcam has licensed more than 5,400 PRISM modules for use at more than 1,100 sites worldwide.

During 1994, Marcam delivered PRISM Quick Scheduler, a product designed as a short interval/finite forward scheduling tool for PRISM customers in both host and client/server environments. In addition, Marcam delivered advanced Customer Order Management software with additional line of business flexibility and a new release of its Purchasing application.

PRISM consists of 35 modules that are organized into four product groups—Production, Logistics, Maintenance and Financials—as well as common functions, or enablers.

- Production product group modules provide functions for use in factories or plants and include:
 - Resource/Inventory Management
 - Resource Processor
 - Planning
 - Production Analysis
 - Quality Management

- Quick Scheduler
- Regulatory Compliance
- Formula Management

- Logistics product group modules address the distribution requirements of process companies and include:

- Customer Order Management
- Purchasing
- Warehouse Management
- Brand Management
- Customer Service
- Quick Response
- SalesTracker

- Maintenance product group modules help manage equipment, including production facilities and rolling stock (vehicles). These applications assist users in establishing a maintenance program that emphasizes planned, rather than reactive maintenance and include the following:

- Entity Management
- Work Management
- Preventive Maintenance
- MRO (Maintenance, Repair, Overhaul) Inventory
- Procurement
- Accounts Payable
- Project Accounting
- Imaging
- Executive Information System
- Approval
- EDI-Link

- Financials product group modules (including those integrated with J.D. Edwards) support financial and cost accounting functions in process companies and include:

- Activity Costing
- General Ledger (JDE)
- Accounts Payable (JDE)

- Accounts Receivable (JDE)
 - Address Book (JDE)
 - Currency (JDE)
 - Modeling/Allocation (JDE)
 - Financial Report Writer (JDE)
 - Financial Support
- Enablers:
- The Foundation module provides common functions or "enablers" used by the other PRISM applications, including ease-of-use features (such as user-defined menus and error messages) and a training database.
 - The Enterprise Manager module, a key component of Marcam's announced Open Enterprise Architecture, enables users to share information across environments and applications through its business enterprise.

PRISM Client/Server

Announced in early 1994, PRISM Client/Server runs in a client/server mode, making it more open at the hardware, operating system and database levels and easier to use.

- The new version also provides an upgrade path to an open computing environment while protecting IBM AS/400 investments for current host-based sites.
- PRISM Client/Server operates on HP 9000, IBM RS/6000 or IBM AS/400 under HP-UX, AIX and OS/400.
- ORACLE, PROGRESS and OS/400 are supported on the server, with Microsoft Windows running on the client.
- PRISM Client/Server is written in the PROGRESS fourth-generation language.

Marcam has begun shipping PRISM Client/Server modules for:

- Resource/Inventory Management
- Resource Processor
- Customer Order Management
- Purchasing
- Quick Scheduler
- ProBase/Foundation
- Financial Support
- General Ledger
- Accounts Receivable
- Accounts Payable
- Fixed Assets
- Project Accounting

In November 1994, Marcam announced the availability of a new suite of client/server financial applications made available to Marcam under an agreement with Open Accounts.

- The software offers customers financial business software solutions for multinational companies in an open client/server environment.
- Applications include General Ledger, Accounts Payable and Receivable, Cash and Treasury, Project Costing and Fixed Assets.

Protean

Protean, Marcam's object technology-based enterprise software, provides users with improved flexibility and ease of use. The applications run in Windows and UNIX-based environments and support multiple commercially available databases.

Since June 1994, Marcam has been shipping Protean Maintenance applications, which represent the company's first object technology release for the process marketplace.

In December 1994, Marcam began shipping Protean Production applications and in May 1995 followed up with its Protean Procurement solution deliveries. Other object-based modules designed for process companies are being released during 1995.

Key Products--Discrete Companies

MAPICS XA

MAPICS XA is the most widely installed MRP II software in the world. The product line is targeted to discrete manufacturers and operates on the IBM AS/400.

- In March 1994, Marcham delivered MAPICS XA Release 1 and in May 1994, the company delivered a standalone version of its International Financial Management applications.
- In September 1994, Marcam delivered nine new applications for MAPICS XA—the Executive Information System and Power Vision applications, and the Maintenance Management System, including Entity Management, Work Management, Preventative Maintenance, MRO Inventory Control, Imaging, Maintenance EIS and Approval.

MAPICS XA features the following modules that provide the framework for systemwide MAPICS XA integration, support, information and analysis—Cross Application Support, Executive Information System, Power Vision and Manufacturing Performance Analysis.

MAPICS XA application modules include the following:

- Marketing and Distribution product group modules help analyze sales performance, accept electronic data interface transactions, control and verify customer shipments and forecast future requirements and include:

- Customer Order Management
- Sales Analysis
- Forecasting
- Market Monitoring and Analysis

- Engineering Management product group modules include:

- Engineering Data Management Interface
- Product Data Management
- Estimating and Quote Management
- Knowledge-Based Configurator

- Production Planning product group modules help keep production on schedule and balanced to forecasts and include:

- Master Production Schedule Planning
- Material Requirements Planning
- Capacity Requirements Planning
- Finite Capacity Planning and Scheduling

- Plant Operations product group modules include:

- Inventory Management
- Production Control & Costing
- Production Monitoring and Control
- Purchasing
- Repetitive Production Management

- There are two complete sets of financial applications for MAPICS XA—International Financial Management and Accounting Management.

- International Financial Management modules, designed with the Synon CASE tool, include Accounts Receivable, Accounts Payable and General Ledger.

- Accounting Management applications are the former MAPICS/DB Financials that have served the MAPICS market for a number of years. The modules (now interchangeable with the International

Financial Management modules), include Accounts Receivable, Accounts Payable, General Ledger, Financial Analysis, Payroll and Contract Accounting.

- Maintenance Management product group modules plan and monitor activities involved in maintaining plant, property, product equipment and vehicles. These modules use the same software as corresponding modules in the PRISM Host maintenance products group.

MXP

Marcam's MXP open systems product line became available through the acquisition of the Varnet Group. The products are targeted to discrete manufacturers and distributors.

- ProBase is an integrated set of CASE tools that are designed to augment the power of the PROGRESS fourth generation language and the MXP line of enterprise solutions.
- During 1994, Marcam delivered MXP enhancements, including support for ORACLE database environments, as well as added interstate communications functionality and PROGRESS Version 7 databases.

MXP is available to run on multiple platforms, including the IBM RS/6000, HP 9000 and Intel-based PCs using DOS, DOS LANs, Windows and OS/2.

- MXP Financial Management modules support multiple companies, multiple warehouses and multiple profit centers and include General Ledger, Accounts Payable and Accounts Receivable.
- MXP Distribution product group modules manage inventory, customer orders and vendor purchases and include Inventory

Management, Order Processing, Purchase Order and Receiving and Electronic Data Interchange (GTR.)

- MXP Manufacturing product group modules address the needs of "make-to-stock", "assemble-to-order" or "engineer-to-order" manufacturers and include Bill of Materials, Production Activity Control, Manufacturing Resource Planning/MRPII and Job Shop.
- MXP Service Management product group (from includes two FieldForce modules (from Sysnet Computer Systems)—FieldForce Service Call Management and FieldForce Service Contract Administration.
- MXP Personnel Management product group modules (from GTR Data) manage personnel issues from payroll to human resources and include Payroll and Human Resources.
- MXP Sales Management product is the Sales Connection (from Interactive Business Information Systems).

Support Services

Marcam provides product support services for its products, that consists primarily of technical assistance, under annual agreements.

Marcam also offers its software customers implementation consulting, education and programming services, usually on a time-and-materials basis.

- Marcam's implementation consulting personnel provide on-site consulting to assist customers in the installation and use of Marcam products.
- Educational materials and instruction are provided in a classroom environment and at customer sites.

- Systems integration and programming services personnel provide custom programming services, generally involving the connection of Marcam modules with other customer applications or development of new applications.

Clients

A representative customer list for the PRISM and MAPICS product families follows:

- **PRISM**—Armstrong World Industries, Bausch and Lomb, B.F. Goodrich Company, Cargill, Inc., Ciba Geigy, Coca-Cola USA, Engelhard, Gillette, Kraft General Foods, Novo Nordisk, Rhone-Poulenc, Rohm and Haas, Tambrands and Warner-Lambert
- **MAPICS XA**—ACI Engineering, Bailey Canada, Braun, Dynatech, Emerson Electric, GAF, Grayhill Inc., IBM, Jaboneria Nacional S.A., Landis & Gyr, Murdock Healthcare, Inc., SNC Industrial Technologies, Total Energy Services, Torrington U.K. and Westinghouse
- **MXP**—Alphatec Electronics, B&G - DSD Holdings, Baxter Healthcare, GAF Building, LTV Continental EMSCO, Marine Optical, Murray's, NCR, Rittenhouse and Siemens
- **Protean**—Cargill, IBM, Rohm & Haas, Henkel and Baltimore Gas & Electric

Marketing and Sales

Marcam markets through its 35 direct sales and support offices and more than 200 affiliates throughout North America, Europe, Africa, the Middle East, the Asia/Pacific region and Latin America, and is represented in more than 60 countries.

Marcam's marketing and sales organization allows the company to offer a coordinated, standard worldwide approach to multisite,

multinational companies, while providing for local support of individual sites.

- Regional offices coordinate relations with large customer headquarters and manage Marcam's local offices and local country operations, which in turn market to medium-size companies and to individual locations of larger companies.
- Most offices provide sales, consulting and implementation assistance.

Alliances

Marcam has various agreements with IBM as follows:

- Marcam is an Authorized Industry Applications Specialist and Premier Business Partner. As a Premier Business Partner, Marcam provides software assistance to process companies using IBM midrange computers.
- IBM has selected PRISM as the chosen software solution for process companies using IBM midrange systems.
- IBM also markets the MAPICS XA product line in certain areas, including Europe and Latin America.
- In July 1993, Marcam and IBM United Kingdom Holdings Limited entered into a joint venture agreement to market the PRISM XA and MAPICS XA product lines in the U.K.

In April 1995, Marcam and NEC announced an agreement to form a multimillion dollar strategic business and technology partnership. The companies expect their partnership to accelerate delivery and expand use of Protean products worldwide, including in Japan where NEC will market Protean.

In January 1994, Marcam announced joint development and marketing alliances with Hewlett-Packard, Oracle, Microsoft and Informix and expanded alliances with IBM and Progress Software as part of its ongoing strategy to meet customers' multiplatform requirements.

Marcam has also expanded its product offerings by entering into various relationships with software vendors offering complementary software applications.

- During fiscal 1994, the company entered into agreements with G.T.R. Data, Inc., Informix Software, Oracle Corporation and Open Accounts, Ltd. under which Marcam has the right to market certain products of the respective companies.
- With the acquisition of the Varnet Group, Marcam obtained similar marketing rights with Interactive Business Information Systems, Inc. (IBIS), GTR Data Inc. and Sysnet Computer Systems Inc.

Marcam also has marketing agreements with Silvon Software (customer service and sales analysis products), American Custom Software (PRIME software product, marketed as the PRISM Quick Response module) and Advanced Software Design (PRISM Regulatory Compliance and Formula Management modules).

In August 1991, Marcam formed an agreement with J.D. Edwards & Company (JDE), under which Marcam has the right to market and support JDE's General Ledger, Accounts Payable, Accounts Receivable, Address Book, Modeling/Allocation, Currency and Financial Report Writer software as PRISM modules.

Competitors

Major competitors include System Software Associates, Datalogix, and SAP.

INPUT Assessment

Marcam's strengths include:

- A high level of recurring revenue associated with its various support services
- A strong marketing relationship with IBM
- Offering products for both the discrete and process manufacturing industries
- Offering a highly customizable product for the process manufacturing environment (PRISM). Applications for the process market often require customization to meet the specific requirements of each manufacturer, a task that traditionally was handled by in-house staff. With PRISM's capabilities, Marcam is strategically positioned in a market that has low penetration (15% to 20%).

Marcam's challenges include:

- Increased competition in the process manufacturing software market (Ross Systems)
- A need to accelerate development of products for platforms other than the AS/400, including UNIX and client/server architectures
- Overcoming increased competition in Europe and the soft European market.

Vendor Profile

A Publication from INPUT's Vendor Analysis Program - U.S.

May 1994

Marcam Corporation

Chairman,
President & CEO:
95 Wells Avenue
Newton, MA 02159
Phone:
Fax:

Paul Margolis

(617) 965-0220
(617) 965-7273

Status:	Public
Employees:	1,040
Revenue:	\$ 126,000,000
Fiscal Year End:	9/30/93

Key Points

- During 1993, Marcam expanded its business focus beyond its IBM AS/400-based PRISM™ product line for the process manufacturing industry, to provide enterprise applications and services for all types of industrial (process and discrete) and distribution companies on many platforms.
- In February 1993, Marcam acquired exclusive marketing rights to IBM's Manufacturing, Accounting, Production

and Information Control System (MAPICS) product line. With MAPICS, Marcam added more than 13,000 licenses and, more than 100 affiliates that market and support MAPICS and provide a new channel for other Marcam products. In April 1993, Marcam announced a new MAPICS version called MAPICS XA that includes 11 new products and extensive enhancements.

- The June 1993 acquisition of the Varnet Group expanded Marcam's offerings to include open systems products for manufacturing, distribution, financial and field service applications. The products are marketed as the MAPICS XP product line.

- In January 1994, Marcam announced PRISM Release 4.0, a new release with UNIX and client/server options; new products for PRISM, MAPICS XA and MAPICS XP; and the Object Technology Initiative—Marcam's technology strategy for the second half of the 1990s and beyond.
- During 1993, Marcam established a separate division (Kendrick Wells) to support customers implementing enterprise-wide solutions.
- IBM has selected Marcam's PRISM™ integrated production, financial, logistics, maintenance and cost accounting software product line as the chosen software solution for process companies using IBM midrange systems.

Company Description

Marcam Corporation is a worldwide provider of its PRISM and MAPICS applications software products and related services to discrete and process manufacturing and distribution companies. The company has nearly 15,000 customers worldwide.

Marcam also provides implementation support, custom programming and systems integration services for a total solution.

Operations and Structure

North American operations are headquartered at Marcam's offices in Newton (MA) and include direct sales and support offices in the following metropolitan areas: Atlanta (GA); Bala Cynwyd (PA); Boston (MA); Burlington and Toronto (Ontario); Chicago (IL);

Cleveland (OH); Dallas (TX); Durham (NC); Eagan (MN); Irvine, San Jose, Torrance and Woodland Hills (CA), Manlius (NY), Seattle (WA) and West Orange (NJ).

Marcam's headquarters for its Europe, Middle East and Africa operations is in Paris (France). Marcam has subsidiaries in the U.K., France, Germany, Italy, Belgium and the Netherlands and a joint venture in the U.K. The company also has representatives in Austria, Denmark, South Africa, Spain, Switzerland, Turkey and the U.K.

Asia Pacific operations are headquartered at Marcam offices in Singapore. Marcam has subsidiaries in Singapore and Australia. The operations include independent representative offices in Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, the Philippines, Singapore, Taiwan and Thailand.

Latin American operations are headquartered at Marcam offices in Atlanta (GA). The operations include subsidiaries in Argentina and Brazil as well as independent representative offices in Argentina, Columbia, Costa Rica, Guatemala, Mexico and Venezuela.

Company Strategy

Marcam's primary marketing objective is to be the leading provider of enterprise applications software and services for industrial and distribution companies worldwide. The company's strategy is to deliver solutions that add substantial value to companies in specific market segments—process companies, discrete

manufacturing companies and distributors.

Marcam has expanded its business to include products for discrete manufacturers and distributors in order to: provide additional revenue opportunities for additional resources to invest in application technology and worldwide services; add computer platforms to provide customers with a choice of environment; new industry-focused solutions that maintain Marcam's strategy of creating value by offering products with application functions that best fit business requirements and increasing license fee opportunities.

As part of a five-year effort, Marcam is developing new, object-oriented, client/server technology. The company

expects to deliver its first applications using this technology in 1994.

Marcam is committed to establishing strong business relationships with its customers, reinvesting resources in future growth, and maintaining a clearly focused development direction in support of the Computer Integrated Enterprise.

Financials

Marcam's fiscal 1993 revenue reached \$126 million, a 38% increase over fiscal 1992 revenue \$91.5 million. Net income declined 69%, from \$8.4 million in fiscal 1992 to \$2.6 million in fiscal 1993.

In the five-year summary that follows, financials have been restated to reflect the acquisition of the Varnet Group in June 1993 and ShawWare in April 1991.

Marcam Corporation Five-Year Financial Summary (\$ Millions, except per share data)

Item	Fiscal Year				
	9/93	9/92	9/91	9/90	9/89
Revenue	\$126.0	\$91.5	\$67.3	\$50.4	\$31.5
• Percent change from previous year	38%	36%	34%	60%	N/A
Income before taxes	\$3.6	\$12.6	\$7.4	\$6.5	\$1.7
• Percent change from previous year	(71%)	70%	14%	282%	N/A
Net income	\$2.6	\$8.4	\$6.1	\$4.2	\$1.8
• Percent change from previous year	(69%)	38%	45%	(a) 133%	N/A
Earnings per share	\$0.25	\$0.90	\$0.65	\$0.51	\$0.22
• Percent change from previous year	(72%)	38%	27%	132%	N/A

(a) Includes a \$1.1 million charge for a change in the method of revenue recognition.

Marcam management attributes fiscal 1993 revenue results to the following:

- License fee revenues increased 33% to \$71.3 million primarily due to improved distribution capabilities and an expanded product line. The increase did not, however, meet the company's expectations due to a shortfall in PRISM sales to major customers, particularly those with substantial operations in Europe.
- Service revenues increased 52% to \$53.2 million due to growth in software installations, expanding international service capabilities and management fees received from MAPICS-related activities.

Declines in net income were attributed to significant investments made during the year, together with a period of weaker customer demand.

- Selling and marketing expenses increased \$22 million (61%) during fiscal 1993 due to sales commissions paid to representatives and the continued expansion of the company's worldwide direct sales organization.
- Research and product development expenses were approximately \$26.1 million (21% of revenue) in fiscal 1993, \$16.8 million (18% of revenue) in fiscal 1992 and \$12 million (18% of revenue) in fiscal 1991 and includes customer-funded projects. Approximately 19%, 23% and 25% of the research and product development expenses, net of capitalized software, were funded by

customers in fiscal 1993, 1992 and 1991, respectively.

- General and administrative expenses increased by \$2 million in fiscal 1993 because of costs associated with the acquisitions of the Varnet Group and marketing rights to MAPICS.

Interim Results: Revenue for the six months ending March 31, 1994 reached \$84.8 million, a 45% increase over \$58.3 million for the same period in 1993. Net income was nearly \$1.5 million, compared to \$2.9 million for the same period a year ago.

- MAPICS XA license fees were even higher than expected due to improved operation and management of this business and excellent response from Marcam affiliates.
- PRISM license fees improved, increasing 20% from the quarter ending September 1993.
- Disappointing MAPICS XP license fees were due to delays in achieving the results the company expected by applying new delivery channels.
- License fees from Europe and North America were below plan, whereas results from Latin America and the Asia Pacific region were above plan.
- Research and product development expenses rose 64% to \$19.5 million for the period and selling and marketing expenses rose 53% to \$35.9 million.

Market Financials

Marcam's fiscal 1993 revenue was derived from process manufacturing, discrete manufacturing and distribution companies.

The PRISM product line is marketed to process manufacturers in the food, chemical, consumer packaged goods, pharmaceutical, building material and related industries. MAPICS XA is marketed to discrete manufacturing companies. MAPICS XP is targeted to industrial manufacturing and distribution companies.

Marcam's target customers range from large multisite, multinational manufacturers to medium-size companies with one or two sites.

Approximately 57% of Marcam's fiscal 1993 revenue was derived from applications software product licenses, 42% from maintenance and support services and 1% from hardware sales. A three-year summary of source of revenue follows:

Marcam Corporation
Three-Year Source of Revenue Summary
 (\$ Millions)

Product/service	Fiscal Year					
	9/93		9/92		9/91	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
Software licenses	\$71.3	57%	\$53.8	59%	\$37.8	56%
Services	53.2	42%	35.0	38%	24.4	36%
Hardware	1.5	1%	2.7	3%	5.1	8%
Total	\$126.0	100%	\$91.5	100%	\$67.3	100%

Geographic Markets

Approximately 70% of Marcam's fiscal 1993 revenue was derived from North

America and 30% from international sources. A three-year geographic source of revenue summary follows:

Marcam Corporation
Three-Year Geographic Source of Revenue Summary
 (\$ Millions)

Geographic Area	Fiscal Year					
	9/93		9/92		9/91	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
North America	\$87.9	70%	\$63.4	69%	\$49.1	73%
International	38.1	30%	28.1	31%	18.2	27%
Total	\$126.0	100%	\$91.5	100%	\$67.3	100%

Acquisitions

In June 1993, Marcam acquired the Varnet Group of Braintree (MA) for 900,000 shares of Marcam common stock valued at \$21.6 million.

- Varnet Group supplies open systems applications software for manufacturing, distribution, financial and field service functions.
- The group had revenue of \$12.9 million and net income of \$1.4 million for the fiscal year ending April 30, 1993.
- Marcam is marketing Varnet's products as its MAPICS XP product line.

In February 1993, Marcam acquired exclusive marketing rights to IBM's MAPICS product line. Marcam also manages the Mapics Inc. software development laboratory in Atlanta (GA). As part of the agreement, IBM received 1.615 million shares of Marcam common stock and the right to receive additional payments based on MAPICS' performance.

During the fourth quarter of fiscal 1992, Marcam acquired its Australian

representative to form a wholly owned subsidiary.

In April 1991, Marcam acquired ShawWare Incorporated of Burlington (Ontario, Canada), a supplier of maintenance and materials management applications software. The acquisition resulted in the addition of six modules (the Maintenance product line) to the PRISM application series. ShawWare revenues were approximately \$8.9 million in fiscal 1990 and \$10.4 million in fiscal 1991.

Employees

As of September 30, 1993, Marcam had 1,040 employees (up from 620 at the end of fiscal 1992), segmented as follows:

Sales, marketing and implementation consulting.....	590
Product development, support and technical services.....	370
Management, administration and finance.....	80
	1,040

Key Products and Services

Marcam offers three product families—PRISM XA, MAPICS XA and MAPICS XP.

PRISM:

In January 1994, Marcam introduced PRISM 4.0, a new release with UNIX and client/server options.

- PRISM 4.0 operates on HP 9000, IBM RS/6000 or AS/400 under HP-UX, AIX, and OS/400, respectively. Oracle, PROGRESS and OS/400 databases will be supported on the server, with Microsoft Windows running on the client. PRISM 4.0 is written in the PROGRESS Application Development Environment.
- Marcam plans to deliver most of the key modules of PRISM 4.0 in calendar 1994.

The PRISM XA product line, introduced in March 1993, is the current generation of Marcam's PRISM application family supporting the production, logistics, maintenance and financial business requirements of process manufacturing companies.

- PRISM XA provides a computing architecture, advanced communications software and application functions to enable companies to integrate multiple sites across a network of IBM AS/400 systems. The software operates on IBM AS/400, IBM System/38 and IBM PCs and compatible systems.
- Marcam believes that the benefits to PRISM XA users include more efficient asset use, greater accuracy of cost

information, detailed tracking of outputs, higher product yields and enhanced customer service capabilities. Unique features include resource management models, production models and activity-based cost accounting.

- Marcam has licensed more than 5,400 PRISM modules for use at more than 850 sites worldwide.

PRISM XA consists of 37 announced modules that are organized into four product groups--Production, Logistics, Maintenance and Financials--as well as common functions, or enablers.

- Production product group modules provide functions for use in factories or plants and include:
 - Resource Management
 - Resource Processor
 - Planning
 - Production Analysis
 - Quality Management
 - Regulatory Compliance
 - Formula Management
 - PRISM/CP for Manufacturing (graphical user interface)
- Logistics product group modules address the distribution requirements of process companies and include:
 - Customer Order Management (COM)
 - Purchasing
 - Warehouse Management
 - PRISM/CP for COM (graphical user interface)
 - Customer Service (Silvon Software)
 - Quick Response (American Custom

- Software)
 - Sales Tracker (Silvon Software)
- Maintenance product group modules help manage equipment, including production facilities and rolling stock (vehicles) and include:
 - Entity Management
 - Work Management
 - Preventive Maintenance
 - MRO Inventory Control
 - Purchasing
 - Accounts Payable
 - Project Accounting
 - Imaging (Spicer Corp.)
 - Executive Information System (Trinzic)
 - Approval
 - EDI-Link
- Financials product group modules (including those supplied by J.D. Edwards) support financial and cost accounting functions and include:
 - Activity Costing
 - General Ledger (JDE)
 - Accounts Payable (JDE)
 - Accounts Receivable (JDE)
 - Address Book (JDE)
 - Currency (JDE)
 - Modeling/Allocation (JDE)
 - Financial Report Writer (JDE)
 - Financial Support
- The Foundation module provides common functions or "enablers" used by the other PRISM XA applications, including ease-of-use features (such as user-defined menus and error messages) and a training database.

- The Enterprise Manager module, a key component of Marcam's announced Open Enterprise Architecture, enables users to share information across environments and applications through its business enterprise.

MAPICS XA:

MAPICS XA is the most widely installed MRP II software in the world. The product line is targeted to discrete manufacturers and operates on the IBM AS/400.

MAPICS XA features include a Cross Application Support module for system-wide integration, the Executive Information System module to collect and present data from a variety of sources and Knowledge-Based Configurator, a rules-based application to improve the speed, flexibility and accuracy of the custom product configuration process in "to order" businesses.

MAPICS XA is organized into six product groups as follows:

- Marketing and Distribution product group modules help analyze sales performance, accept electronic data interface transactions, control and verify customer shipments and forecast future requirements and include:
 - Customer Order Management
 - Sales Analysis
 - Forecasting
- Engineering Management product group modules include:

- Engineering Data Management Interface
- Product Data Management
- Estimating and Quote Management (SNL Solutions)
- Knowledge-Based Configurator (TriMin)
- Production Planning product group modules help keep production on schedule and balanced to forecasts and include:
 - Master Production Schedule Planning
 - Material Requirements Planning
 - Capacity Requirements Planning
 - Finite Capacity Planning & Scheduling (Pritsker)
- Plant Operations product group modules include:
 - Inventory Management
 - Production Control & Costing
 - Production Monitoring & Control
 - Purchasing
 - Repetitive Production Management
- International Financial Management modules, designed with the Synon CASE tool, include the following:
 - Accounts Receivable
 - Accounts Payable
 - General Ledger
- Accounting Management applications are the former MAPICS/DB Financials that have served the MAPICS market for a number of years. The modules (now interchangeable with the International

Financial Management modules), include the following:

- Accounts Receivable
- Accounts Payable
- General Ledger
- Financial Analysis
- Payroll
- Contract Accounting (Lexel)
- Maintenance Management product group modules plan and monitor activities involved in maintaining plant, property, product equipment and vehicles. These modules use the same software as corresponding modules in the PRISM XA Maintenance products group.

In January 1994, Marcam also announced a new Windows-based Executive Information Systems for use with MAPICS XA and Power Vision, a PC-based product for viewing the MAPICS database.

MAPICS XP:

Marcam's MAPICS XP open systems product line became available through the acquisition of the Varnet Group. The products are targeted to discrete manufacturers and distributors.

The software is written with Progress Software's HyperTools/PowerTools CASE toolset, providing gateways to multiple relational databases and supporting client/server.

MAPICS XP is available to run on multiple platforms, including the IBM RS/6000, HP 9000 and Intel-based PCs

using DOS, DOS LANs, Windows and OS/2.

- MAPICS XP Financial Management modules support multiple companies, multiple warehouses and multiple profit centers and include:

- General Ledger
- Accounts Payable
- Accounts Receivable

- MAPICS XP Distribution product group modules manage inventory, customer orders and vendor purchases and include:

- Inventory Management
- Order Processing
- Purchase Order and Receiving

- MAPICS XP Manufacturing product group modules address the needs of "make-to-stock", "assemble-to-order" or "engineer-to-order" manufacturers and include:

- Bill of Materials
- Production Activity Control
- Manufacturing Resource Planning/MRP II
- Job Shop

- MAPICS XP Service Management product group modules (from Sysnet Computer Systems) include:

- FieldForce Service Call Management
- FieldForce Service Contract Administration

- MAPICS XP Personnel Management product group modules (from GTR Data)

manage personnel issues from payroll to human resources and include:

- Payroll
- Human Resources

- MAPICS XP Sales Management product is the Sales Connection (from Interactive Business Information Systems).

In January 1994, Marcam announced a new Windows-based Executive Information System for use with MAPICS XP, support for Oracle databases (Q2 1994), PROGRESS Version 7.0 (Q2 1994) and delivery of a new Windows-based graphical user interface (Q1 1995).

Support Services:

Marcam provides product support services for its products, that consists primarily of technical assistance, under annual agreements.

Marcam also offers its software customers implementation consulting, education and programming services, usually on a time-and-materials basis.

- Marcam's implementation consulting personnel provide on-site consulting to assist customers in the installation and use of Marcam products.
- Educational materials and instruction are provided in a classroom environment and at customer sites.
- Systems integration and programming services personnel provide custom programming services, generally involving the connection of Marcam modules with other customer

applications or development of new applications.

- Marcam's Kendrick Wells division, based in Bala Cynwyd (PA), was created in March 1993 to support customers implementing enterprise-wide solutions. The division provides business and management consulting to help companies navigate the strategic and tactical challenges of implementing information technology.

Clients

A representative customer list for the PRISM and MAPICS product families follows:

- PRISM—Armstrong World Industries, Bausch and Lomb, Ciba Geigy, Engelhard, Gillette, Novo Nordisk, Rhone-Poulenc, Pohn and Haas, Tambrands, Warner-Lambert
- MAPICS—ACI Engineering, Bailey Canada, Braun, IBM, Jaboneria Nacional S.A., Landis & Gyr, Murdock Healthcare, Inc., SNC Industrial Technologies, Total Energy Services, Torrington U.K.
- Marcam is an Authorized Industry Applications Specialist and Premier Business Partner. As a Premier Business Partner, Marcam provides software assistance to process companies using IBM midrange computers.
- Marcam was one of the first companies involved in the Cooperative Software (CS) program. The CS program enables Marcam and IBM to market PRISM jointly. The company also participates in similar IBM marketing relationships in other countries.
- IBM has selected PRISM as the chosen software solution for process companies using IBM midrange systems.
- IBM also markets the MAPICS XA product line in certain areas, including Europe and Latin America.
- In July 1993, Marcam and IBM United Kingdom Holdings Limited entered into a joint venture agreement to market the PRISM XA and MAPICS XA product lines in the U.K.

In January 1994, Marcam announced it had established joint development and marketing alliances with Hewlett-Packard, Oracle, Microsoft and Informix and expanded alliances with IBM and Progress Software as part of its ongoing strategy to meet customers' multiplatform requirements.

Marcam has also expanded its product offerings by entering into various relationships with software vendors offering complementary software applications.

Marketing and Sales

Marcam markets through its 35 direct sales and support offices and more than 150 affiliates throughout North America, Europe, Africa, the Middle East, the Asia/Pacific region and Latin America, and is represented in more than 60 countries:

Alliances

Marcam has various agreements with IBM as follows:

Marcam Corporation
May 1994

- During fiscal 1993, Marcam concluded agreements with SNL Solutions Inc., TriMin Systems Inc., Pritsker Corporation, Synon, and Lexel Corporation under which Marcam has the right to market certain products of the respective companies.
- With the acquisition of the Varnet Group, Marcam obtained similar marketing rights with Interactive Business Information Systems, Inc. (IBIS), GTR Data Inc. and Sysnet Computer Systems Inc.

Marcam also has marketing agreements with Silvon Software (customer service and sales analysis products), American Custom Software (PRIME software product, marketed as the PRISM Quick Response module), Advanced Software Design (PRISM Regulatory Compliance and Formula Management modules).

In August 1991, Marcam formed an agreement with J.D. Edwards & Company (JDE), under which Marcam has the right to market and support JDE's General Ledger, Accounts Payable, Accounts Receivable, Address Book, Modeling/Allocation, Currency and Financial Report Writer software as PRISM modules.

Competitors

Major competitors include System Software Associates, Datalogix, and SAP.

INPUT Assessment

Marcam's strengths include:

- A high level of recurring revenue associated with its various support services
- A strong marketing relationship with IBM
- Offering products for both the discrete and process manufacturing industries
- Offering a highly customizable product for the process manufacturing environment (PRISM). Applications for the process market often require customization to meet the specific requirements of each manufacturer, a task that traditionally was handled by in-house staff. With PRISM's capabilities, Marcam is strategically positioned in a market that has low penetration (15% to 20%).

Marcam's challenges include:

- Increased competition in the process manufacturing software market (Ross Systems)
- A need to accelerate development of products for platforms other than the AS/400, including UNIX and client/server architectures
- Overcoming increased competition in Europe and the soft European market.

COMPANY PROFILE

MARCAM CORPORATION

95 Wells Avenue
Newton, MA 02159
(617) 965-0220

Paul Margolis, Chairman, President,
and CEO
Public Corporation, NASDAQ
Total Employees: 470
Total Revenue, Fiscal Year End
9/30/91: \$56,472,000

The Company

Marcam Corporation is a worldwide provider of applications software products exclusively for the process manufacturing industry.

- Marcam was founded in 1980 as an applications software company, distributing and providing add-on products and consulting services to MAPICS, IBM's manufacturing system for midrange computers.
- Marcam recognized the unique manufacturing requirements of the process industries and the lack of software systems designed exclusively for these industries. To meet those needs, the company developed and currently markets PRISM™, an integrated manufacturing, financial, logistics, and cost accounting software product line.
- Marcam worked very closely with more than 50 process manufacturers, many of which are among the Fortune 100, to develop PRISM.
- Marcam also provides implementation support, custom programming, and systems integration services for a total process manufacturing solution.

IBM has selected PRISM as the chosen software solution for process manufacturing using IBM midrange systems.

- Marcam is an Authorized Industry Applications Specialist and Business Partner. As a Business Partner, Marcam provides software assistance to manufacturers using IBM midrange computers.
- Marcam was one of the first companies involved in the Cooperative Software (CS) program, and PRISM is the only manufacturing planning and control system included. The CS

program enables Marcam and IBM to market PRISM jointly. The company also participates in similar IBM marketing relationships in other countries.

In August 1990, Marcam made an initial public offering of 900,000 shares of its common stock. Net proceeds from the offering of approximately \$11.3 million are being used for working capital and general corporate purposes.

Acquisitions/alliances include the following:

- In April 1991, Marcam acquired ShawWare Incorporated of Burlington (Ontario, Canada), a supplier of maintenance and materials management applications software. The acquisition resulted in the addition of six modules (the Maintenance Management Series) to the PRISM product line. ShawWare revenues were about \$8.9 million in fiscal 1990 and \$10.4 million in fiscal 1991.
- In March 1991, Marcam concluded an agreement with Advanced Software Design (ASD) which grants Marcam the right to market and support certain ASD software. Marcam markets and supports the ASD software as the new Regulatory Compliance and Formula Management PRISM modules.
- In August 1991, Marcam formed an agreement with J.D. Edwards & Company (JDE) under which Marcam has the right to market and support JDE's General Ledger, Accounts Payable, Accounts Receivable, Address Book, Modeling/Allocation, Currency, and Financial Report Writer software as PRISM modules. After integration with the relevant Marcam applications, these financial modules will replace Marcam's current financial products as Release 2.0.

Over the past year, Marcam has seen a positive trend towards multi-national, multi-site contracts. The company's fiscal 1991 revenue reached \$56.5 million, a 34% increase over fiscal 1990 revenue of \$42.2 million. Net income rose 26%, from \$4.2 million in fiscal 1990 to over \$5.3 million in fiscal 1991. In the five-year summary that follows, financials prior to fiscal 1991 have been restated to reflect the pooling-of-interests acquisition of ShawWare in April 1991:

**MARCAM CORPORATION
FIVE-YEAR FINANCIAL SUMMARY
(\$ millions, except per share data)**

ITEM	FISCAL YEAR				
	9/91	9/90	9/89	9/88	9/87
Revenue	\$56.5	\$42.2	\$27.1	\$15.5	\$10.8
• Percent change from previous year	34%	56%	75%	44%	N/A
Income (loss) before taxes	\$7.7	\$6.6	\$1.5	\$(1.3)	\$(1.4)
• Percent change from previous year	17%	340%	215%	--	N/A
Net income (loss)	\$5.3	\$4.2	\$1.2	\$(1.6)	\$(1.4)
• Percent change from previous year	26%	(a) 250%	175%	(14%)	N/A
Earnings (loss) per share	\$0.64	\$0.58	\$0.17	\$(0.27)	\$(0.33)
• Percent change from previous year	10%	(a) 241%	163%	(18%)	N/A

(a) Includes a \$1.1 million (\$0.15 per share) charge from the cumulative effect of a change in the method of recognizing software revenue.

Marcam management attributes fiscal 1991 results to the following:

- License fee revenues increased 20%, principally due to the expansion of the company's distribution capabilities, as well as an expanded product line in 1991 which led to increased licensing volume to new customers and existing customers for additional sites and modules.
- Service revenues increased 69%, primarily due to the growth in PRISM installations and expanded service capabilities in Europe in 1991 and 1990.
- Hardware revenues rose 25% to \$2 million; however hardware sales were discontinued in the fourth quarter of fiscal 1991 because of low margins.

Research and product development expenses were approximately \$8.7 million (15% of revenue) in fiscal 1991, \$6.5 million (15% of revenue) in fiscal 1990, and \$4.7 million (17% of revenue) in fiscal 1989. Approximately 34%, 44%, and 41% of the expenses were funded by customers in fiscal 1991, 1990, and 1989, respectively.

Revenue for the three months ending December 31, 1991 reached \$16.6 million, a 24% increase over \$13.4 million for the same period in 1990. Net income rose 14%, from \$1.2 million to \$1.4 million.

Major competitors include System Software Associates and Datalogix.

Key Products and Services

Approximately 60% of Marcam's fiscal 1991 revenue was derived from applications software product licenses, 36% from maintenance and support services, and 4% from hardware sales. A three-year summary of source of revenue follows:

MARCAM CORPORATION THREE-YEAR SOURCE OF REVENUE SUMMARY (\$ millions)

ITEM	FISCAL YEAR					
	9/91		9/90		9/89	
	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
Licenses	\$34.2	60%	\$28.5	68%	\$16.0	59%
Maintenance	20.3	36%	12.0	28%	6.5	24%
Hardware sales	2.0	4%	1.7	4%	4.6	17%
TOTAL	\$56.5	100%	\$42.2	100%	\$27.1	100%

The PRISM product family, introduced in 1986, is an integrated planning and control software system targeted to process manufacturers.

- The software is designed for IBM AS/400, IBM System/38, and IBM PCs and compatible systems.
- Marcam has licensed over 3,600 PRISM modules for use at more than 650 sites worldwide.

The PRISM family consists of 28 announced modules that are organized into four product lines--Production Series, Logistics Series, Maintenance Management Series, and Financials Series--as well as common functions, or enablers.

- Productions Series modules provide functions for use in factories and include:
 - Resource Management
 - Resource Processor
 - Planning

- Production Analysis
 - Quality Management
 - Regulatory Compliance
 - Formula Management
 - PRISM/CP for Manufacturing (graphical user interface)
- Logistics Series modules help operate the distribution functions of process companies and include:
- Customer Order Management (COM)
 - Purchasing
 - Warehouse Management
 - PRISM/CP for COM (graphical user interface)
- Maintenance Management Series modules help manage equipment, including production facilities and rolling stock (vehicles) and include:
- Maintenance Management
 - MRO Inventory
 - MRO Purchasing
 - Project Accounting
 - Imaging
 - Executive Information System
- Financials Series modules (including those supplied by J.D. Edwards) support financial and cost accounting functions and include:
- Activity Costing
 - General Ledger (JDE)
 - Accounts Payable (JDE)
 - Accounts Receivable (JDE)
 - Address Book (JDE)
 - Currency (JDE)
 - Modeling/Allocation (JDE)
 - Financial Report Writer (JDE)
 - Financial Support
- The Foundation module provides common functions or "enablers" used by the other PRISM applications, including ease-of-use features (such as user-defined menus and error messages) and a training data base.

Marcam also provides implementation support, custom programming, and systems integration services to tailor PRISM to any particular customer site.

- Marcam provides interfaces to various leading third-party finite scheduling, maintenance management, forecasting, process control, and real-time data collection software products.
- Marcam's Implementation Consultants work on-site with customers while products are being implemented to ensure that the system fulfills the clients' requirements.
- Marcam provides custom extensions to PRISM, or new and complementary applications.
- Customer Support provides telephone assistance, remote diagnostic services, and product training.

Industry Markets

One hundred percent of Marcam's revenue is derived from the process manufacturing industry, including companies in food, chemical, pharmaceutical, consumer products, metals, paper, textile, glass, petroleum, and forest products industries.

Marcam clients include such large multinational process manufacturers as Cadbury Schweppes, Coca-Cola, Hunt Wesson, Dunlop, Michelin, Ares-Serono, Eastman Kodak, Henkel, Johnson & Johnson, Ralston Purina, Gillette, Rhone-Poulenc, Colgate Palmolive, Alcan, Alumax, Falconbridge, Armstrong World Industries, St. Gobain, International Paper, ITT Rayonier, Scott Paper, and Canadian Pacific Forest Products.

Geographic Markets

Approximately 68% of Marcam's fiscal 1991 revenue was derived from North America and 32% from international sources. A three-year geographic source of revenue summary follows:

MARCAM CORPORATION
THREE-YEAR GEOGRAPHIC SOURCE OF REVENUE SUMMARY
(\$ millions)

	FISCAL YEAR					
	9/91		9/90		9/89	
ITEM	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
North America	\$38.3	68%	\$31.3	74%	\$21.9	81%
International	18.2	32%	10.9	26%	5.2	19%
TOTAL	\$56.5	100%	\$42.2	100%	\$27.1	100%

Marcam markets through its 20 direct sales and support offices throughout North America, Europe, the Far East, and Latin America, and is represented in more than 30 countries:

- North American operations are headquartered in Newton (MA), and include direct sales and support offices in Atlanta (GA), Bala Cynwyd (PA), Cleveland (OH), Dallas (TX), Eagan (MN), Irvine (CA), Lisle (IL), West Orange (NJ), and Toronto (Canada).
- European headquarters are outside of London. Subsidiaries are in the U.K. and Germany. Affiliates are in Belgium, Italy, and the Netherlands. Representatives are in Austria, Denmark, France, and Spain.
- Asia/Americas operations are headquartered in Newton (MA) and are divided into the Asia and Latin America regions. The Asia region is managed from Marcam's subsidiary in Singapore. The Latin America region operates a support office in Sao Paulo. The operations include independent representatives in Argentina, Australia, Brazil, Columbia, Indonesia, Japan, Korea, Malaysia, Mexico, New Zealand, Singapore, Taiwan, Thailand, and Venezuela.

The Production, Logistics, and Financial product lines are available in Chinese, English, French, German, Italian, Japanese (including Kanji), and Spanish. The Maintenance Management product line is available in English, French, and Spanish, and will be translated into additional languages.

COMPANY PROFILE

MARCAM CORPORATION

95 Wells Avenue
Newton, MA 02159
(617) 965-0220

Paul Margolis, President and CEO
Private Company
Total Employees: 150
Total Revenue, Fiscal Year End
9/30/89: \$17,000,000

The Company

Marcam Corporation is a worldwide provider of applications software products exclusively for the process manufacturing industry.

- Marcam was founded in 1980 as an applications software company, distributing and providing add-on products and consulting services to MAPICS, IBM's manufacturing system for midrange computers.
- Marcam recognized the unique manufacturing requirements of the process industries and the lack of software systems designed exclusively for these industries. To meet those needs, the company developed and currently markets PRISM™, an integrated manufacturing, financial, logistics, and cost accounting software product.
- Marcam worked very closely with more than 50 process manufacturers, many of which are among the Fortune 100, to develop PRISM.
- Marcam also provides implementation support, custom programming, and systems integration services for a total process manufacturing solution.

IBM has selected PRISM as the chosen software solution for process manufacturing using IBM midrange systems.

- Marcam is an Authorized Industry Applications Specialist and Business Partner. As a Business Partner, Marcam provides software assistance to manufacturers using IBM midrange computers.
- Marcam was one of the first companies involved in the Cooperative Software (CS) program, and PRISM is the only manufacturing planning and control system included. The CS program enables Marcam and IBM to market PRISM jointly.

The company also participates in similar IBM marketing relationships in other countries.

Marcam's fiscal 1989 revenue reached an estimated \$17 million, a 100% increase over fiscal 1988 revenue.

Major competitors include Pansophic, System Software Associates, and Datalogix.

Key Products and Services

PRISM, introduced in 1986, is an integrated process manufacturing planning and control applications software system designed for IBM midrange (AS/400 and System/38) computers.

- PRISM modules include the following:
 - Foundation is used by each module in the PRISM system, and contains the PRISM-wide security system and tailoring functions.
 - Resource Management defines and manages all elements of processing manufacturing, including electricity, processing hours, waste, by-products, and co-products.
 - Resource Processor, using Marcam's patented Production Model concept, defines the process and contains all of the standards and models used in the manufacturing system.
 - Resource Planning plans requirements for all resources associated with process manufacturing.
 - Production Analysis provides decision support by enabling managers to analyze the production process through "what if" queries.
 - Purchasing manages the entire procurement process.
 - Customer Order Management controls the order processing cycle.
 - Advanced Costing provides management with cost analysis, simulation, and modelling capabilities to develop "what if" scenarios outlining possible changes in production.
 - Financial Support allows PRISM manufacturing modules to interface with non-PRISM financial systems.

- Financials offers accounting applications such as General Ledger, Accounts Payable, and Accounts Receivable.
- Query Plus creates user-defined inquiries and reports.
- There are currently over 175 PRISM installations worldwide.

Marcam also provides implementation support, custom programming, and systems integration services to tailor PRISM to any particular customer site.

- Marcam provides interfaces to various leading third-party finite scheduling, maintenance management, forecasting, process control, and real-time data collection software products.
- Marcam's Implementation Consultants work on-site with customers while products are being implemented to ensure that the system fulfills the clients' requirements.
- Marcam provides custom extensions to PRISM, or new and complementary applications.
- Customer Support provides telephone assistance, remote diagnostic services, and product training.

Industry Markets

One hundred percent of Marcam's revenue is derived from the process manufacturing industry, including companies in food, chemical, pharmaceutical, consumer products, metals, paper, textile, glass, petroleum, and forest products industries.

Marcam clients include such large multinational process manufacturers as General Foods, Ralston Purina, Gillette, Rhone Poulenc, Henkel, and Campbell's Soup.

Geographic Markets

Approximately 60% of Marcam's revenue is derived from the U.S. and 40% from international sources. PRISM has installations in more than 25 countries.

Headquartered in Newton (MA), Marcam also has offices in Georgia, California, Texas, Illinois, Ohio, Minnesota, New Jersey, and Ontario (Canada).

Marcam offers direct marketing and support in the U.S., the U.K., and Germany and has agreements with an agent network throughout Western Europe and Asia.

COMPANY HIGHLIGHT

MARCHBANKS and PARKER, INC.
4538 Centerview Drive
San Antonio, TX 78228
(512) 736-1909

↓
Jerry Parker, President
Private corporation
Total employees: 6
Total revenues, fiscal year
end 1976: \$300,000*

COMPANY BACKGROUND:

- The company was formed in March 1973 by Jerry Parker and Jerry Marchbanks as an outgrowth of the programming work done by the principals for Coca Cola in San Antonio.
- The company offers route distribution account packages for the beverage industry.

OVERALL ASSESSMENT:

- Marchbanks and Parker (M & P) is a small firm whose small business outlook will keep them confined to this mode of operation. It has taken the company 3 years to grow from 2 to 6 employees.
- Most of the sales appear to be by word of mouth. Mr. Marchbanks, VP Marketing, is a one man department and is hard pressed to cover the wide geographic market necessary to obtain significant revenue from the company's specialty.
- The company claims to have aggressive growth plans for the future. It expects to offer timesharing services and to double the size of the staff in 12 months; management expects to triple income during the same time period.

KEY PRODUCTS AND SERVICES:

- The company's major efforts have been devoted to developing a comprehensive series of nine packages for route distribution accounting for soft drink bottlers. The price for a complete set of programs ranges between \$150,000 - \$200,000. Four companies have installed five of the nine programs.
- M & P provides consulting services related to distribution accounting.

* Estimate by INPUT

COMPANY HIGHLIGHT/MARCHBANKS and PARKER, INC.

APPLICATIONS: The company's major application is route accounting.

INDUSTRY MARKETS: The company's efforts are confined to the soft drink industry although it could easily expand its services to wine, beer, liquor, bakery products and milk distributors.

GEOGRAPHIC MARKETS: Most sales efforts have been confined to the Southwest, although the largest sale was to Allegheny Beverage in the East.

COMPUTER HARDWARE AND SOFTWARE: There is no hardware installed, but the company expects to install a timesharing system in 1977.

**MARTIN MARIETTA INFORMATION
SYSTEMS**

400 Virginia Street, S.W.
Suite 350
Washington, D.C. 20024
Phone: (202) 646-2345
Fax: (202) 646-4870

Vice President &
General Manager: Gary Mann
Status: Operating Unit of Martin
Marietta Information Group
Total Employees: 2,800
Total Revenue: \$400 million*
Fiscal Year End: 12/31/92

* Restated

Key Points

- Martin Marietta Information Systems (Information Systems) recently became an operating unit within Martin Marietta's newly created Information Group. This group, formed in April 1993, combines the information services-related activities of Martin Marietta and GE Aerospace, which was merged into Martin Marietta earlier this year.
- Information Systems' external business activities are currently structured around two major programs--the Department of Housing and Urban Development's HUD Information Processing Service and the Ballistic Missile Defense Organization (BMDO)/U.S. SpaceCom's National Test Facility--and four key market areas--Government Systems, Commercial Computer Products/Services, Simulation Systems, and Image Generator Products.
- In April 1992, Postal Systems, an Information Systems unit that provides products and services to the United States Postal Service, was separated from Information Systems to form its own company. Postal Systems now reports to Martin Marietta Electronics and Missiles Group.

**Company
Description**

Martin Marietta Information Systems provides products and services in the areas of computer-based information management for civilian, military, and commercial clients.

Applications supported include integration of information management systems, advanced simulation capabilities, training systems, image generators, and data processing services.

Information Systems is now an operating unit of Martin Marietta Information Group, which was formed in April 1993 subsequent to the merger of Martin Marietta and GE Aerospace. Information Group, with approximately 10,600 employees and annual revenue of about \$1.9 billion, currently conducts its operations through the following units:

- Information Systems (Washington, D.C.) previously operated as part of Martin Marietta's Electronics, Information & Missiles Group.
- Management & Data Systems (Valley Forge, PA), a former GE Aerospace unit, conducts systems integration, systems engineering, and software development services primarily for command, control, communications, and intelligence programs for the military and government agencies.
- Automation Systems (Daytona Beach, FL), also a former GE Aerospace unit, produces automated test systems for military electronics, logistics systems, and vehicle control electronics.
- Strategic Systems (Blue Bell, PA), also a former GE Aerospace unit, is the system engineering and integration contractor for the nation's advanced strategic defenses.
- Internal Information Systems (Orlando, FL) is Martin Marietta's principal management information systems supplier, providing applications systems, computer resources, and communications systems to the Corporation and its operating companies.

Financials

Information Systems' total 1992 revenue was approximately \$400 million. This is a restated value based on portions of the old GE Aerospace organization joining Information Systems and the internal accounts processing provided to other Martin Marietta organizations now reporting to the Information Group instead of Information Systems.

Market Financials

Approximately 95% to 98% of Martin Marietta Information Systems' 1992 restated revenue was derived from the federal government. The remainder was derived from commercial clients.

For 1993, it is estimated that approximately 18% of revenue will come from Government Systems, 10% from Commercial Computer Products/Services, 57% from Simulation Systems, and 15% from Image Generator Products.

Geographic Markets

Approximately 88% of Information Systems' revenue is derived from the U.S. and the remainder from international sources.

International revenue comes from simulators for flight systems and image generators.

U.S. offices are located in Washington, D.C., Orlando (FL), Denver and Colorado Springs (CO), Lanham and Bethesda (MD), Dayton (OH), and Albuquerque (NM).

Key Products and Services

The majority of Information Systems' revenue is derived from large systems integration projects. The company also provides systems operations and professional services.

Government Systems:

Government Systems (formerly Civil Information Systems) was formed to build on Information Systems proven track record within the non-DoD market to focus primarily on federal civil agencies. The principal areas of focus include law enforcement and information systems modernization programs whose purpose is improving the government's service to the citizens.

In November 1990, the U.S. Department of Housing and Urban Development (HUD) selected Information Systems as principal contractor for the upgrade, consolidation, and support of HUD's nationwide information systems capabilities under a 12-year, \$526 million contract.

- Under the contract in HUD's Integrated Information Processing Service (HIIPS) program, Information Systems is establishing a single, integrated operating network from existing data systems serving HUD's headquarters in Washington, D.C. and 81 regional and field offices.

- Martin Marietta's data center in Lanham (MD) handles most of the program's data processing workload during the developmental phase and in subsequent support of the unified system, serving as the computer and telecommunications network command center for HUD.
- In the third year of this contract with HUD, the new integrated computer network is helping the agency process more than 350,000 transactions daily and will save HUD some \$100 million over the operational phase of the contract.

The Computer Services Organization (CSO), headquartered in Lanham (MD), provides a range of outsourcing services to U.S. federal government agencies.

- Clients include the Departments of Housing and Urban Development, Justice, Agriculture, Health and Human Services, and Treasury.
- For the Department of Agriculture, the company provides processing services for the Computerized Information Delivery Service, which electronically compiles and distributes crop statistics and other information for more than 200 federal and state agencies, universities, and commercial subscribers nationwide.
- Under a long-term contract with Utah's Department of Employment Security, the company is supporting management of Internet--a U.S. Department of Labor nationwide information base for processing unemployment insurance claims.
- Information Systems is also providing data processing support for the Justice Department's Immigration and Naturalization Service relating to verification of eligibility of aliens for health and welfare benefits.
- During 1992, Information Systems was awarded an extension to a U.S. Treasury Department contract under which Information Systems provides processing services for retention, retrieval, and analysis of federal financial reports for the department's Financial Management Service, the Office of Management and Budget, and other government agencies.
- Information Systems was recently awarded contracts by INFONET to provide processing services to the General Services Administrations in support of their NEARS system; and to the U.S. Army to support the requirements of the KEYSTONE system.

- PRICE estimating tools (formerly GE Aerospace products) are supported by CSO.
- CSO clients are supported from Information Systems' data centers in Lanham (MD) and Orlando (FL).

Commercial Computer Products/Services:

CSO also provides outsourcing services to a number of commercial clients. In 1992 and 1993, CSO expanded its commercial business by signing contracts with companies whose principal business is in the area of food distribution. These include J.P. Foodservice; PYA/Monarch, a division of Sara Lee Corporation; and ProSource Distribution Services, a former division of the Burger King Corporation.

CSO provides open systems, client/server architecture consulting, and Apple VITAL training.

Simulation Systems:

Since 1985, Information Systems has been engaged in the design, development, and operation of the National Test Facility (NTF), located at Falcon Air Force Base (CO).

- The NTF is a nationwide state-of-the-art computer simulation system for the test and evaluations of strategic defense concepts, architectures, battle management, and technology applications.
- Under a multiyear contract, Information Systems provides operational and development support for the computer-based test and evaluation network linking laboratories and research facilities throughout the country.

Leveraging its experience with the National Test Facility and other business elements, Information Systems is addressing DoD market niches requiring information technology to solve complex processing requirements.

- Simulation and training systems are used primarily for mission rehearsal and training for pilots, radar operators, and ship and tank crews. The systems, based on GE-developed Compu-Scene computer-simulation technology, include data base generation systems and integrated display systems.
- In a simulation program for the Air Force, Information Systems is responsible for operating and maintaining the Theatre Air Command and Control Simulation Facility at Kirtland Air Force

Base, New Mexico. Simulated combat exercises there test U.S. and allied battle management strategies for defense against air attack.

- Under an agreement signed with Sega Corporation in 1992, Simulation Systems' image-processing technology will be used by Sega Corporation in its popular video and arcade games.

Image Generators:

As part of the training simulation market, Information Systems produces a family of image generators, ranging from state-of-the-art, top-of-the-line Compu-Scene VI to the low-cost SE1000 system tailored for high volume applications. These generators provide users with highly realistic synthetic graphic environments for training, mission, rehearsal, and simulations.

**Marketing
and Sales**

Information Systems markets its services through a direct sales force, through competitive bidding, and through recommendations of satisfied customers.

Alliances

Information Systems has various alliances with hardware and software vendors as follows:

- Apple Corporation (VITAL training)
- Sega Corporation

Competitors

Major competitors include Computer Sciences Corporation, PRC, SAIC, TRW, IBM, Grumman Data Systems, EDS, and Harris.

COMPANY PROFILE

MARTIN MARIETTA INFORMATION SYSTEMS GROUP

4795 Meadow Wood Lane
Chantilly, VA 22021
(703) 802-5000

Robert J. Polutchko, President
Operating Group of Martin Marietta
Corporation
Total Employees: 6,000
Total Revenue, Fiscal Year End
12/31/89: \$747,900,000
Noncaptive Revenue: \$515,000,000

The Company

Martin Marietta Information Systems Group, an operating group of Martin Marietta Corporation, provides a range of products and services to government and industry in areas that include command and control, information management, systems integration, advanced simulation, data processing, artificial intelligence, systems operations (facilities management), professional services, air traffic control, and communications networks.

The Group's total 1989 sales were \$747.9 million, a 25% decrease from \$997.8 million in 1988.

- The revenue decline in 1989 is principally due to the completion of a major electronic communication systems contract during 1988 and the 1988 sale of the company's remaining 68.3% interest in Hoskyns Group.
- Martin Marietta's interest in Hoskyns, a U.K.-based information services firm, was sold to Plessey Company plc for approximately \$191 million in cash.
- A three-year financial summary follows:

**MARTIN MARIETTA INFORMATION SYSTEMS GROUP
THREE-YEAR FINANCIAL SUMMARY
(\$ millions)**

ITEM	FISCAL YEAR		
	1989	1988	1987
Revenue	\$747.9	\$997.8	\$907.4
• Percent increase (decrease) from previous year	(25%)	10%	4%
Operating profit	\$21.3	\$213.7 (a)	\$49.3
• Percent increase (decrease) from previous year	(90%)	333%	*

* Percent change greater than 1,000%.

(a) Includes third quarter gain of \$164.3 million from the sale of the company's interest in Hoskyns Group plc.

Key Products and Services

The majority of noncaptive revenue is derived from large systems integration projects. The company also provides systems operations and professional services.

During the fourth quarter of 1989, Martin Marietta Information Systems Group restructured its operations into seven, highly focused business areas as follows:

- Information & Communications Systems designs, develops, produces, and operates systems that use advanced hardware and man/machine interface technologies for defense and non-defense purposes. Current projects in progress include the following:
 - Studying the development of information management systems for NASA's Space Station and other space-based systems
 - Developing a software processing system using artificial intelligence to automatically identify ground targets for tactical fighter pilots
 - An automated tactical communications monitoring and control system for the Army and Air Force

- Integrating systems for a transportable military intelligence system being developed by the Army and Air Force
- A software development and support program to upgrade the operations center and command post at Cheyenne Mountain
- Simulation Systems designs, develops, and installs large-scale, distributed simulation and modeling systems.
 - Simulation Systems has designed and is operating the National Test Bed, located in the National Test Facility at Falcon Air Force Base near Colorado Springs (CO). The National Test Bed is a nationwide state-of-the-art computer simulation system for test and evaluation of strategic defense concepts, architectures, battle management, and technology applications. The system will be fully operational in 1990.
 - Martin Marietta will also operate and maintain the Tactical Air Command and Control Simulation facility at Kirtland Air Force base in Albuquerque (NM).
- Civil Information Systems designs, develops, and integrates multifunction administrative and operational large-scale systems for federal, state, local, and foreign governments. In addition, electronic data interchange and remote computing services are offered to government and industry via three data centers.
 - Contracts include: developing and installing a worldwide personnel and payroll administration system for the U.S. Navy; processing services for the National Agricultural Statistics Service of the U.S. Department of Agriculture in the collection and analysis of information on crop and livestock production, weather, and other areas; and software development and operation of a data center for the Kuwait Air Force under a contract with the U.S. Navy.
- Air Traffic Systems designs, integrates, and implements civilian and military air traffic control systems and provides airport management services.
 - Air Traffic Systems is the systems engineering and integration contractor for the Federal Aviation Administration's National Airspace Plan, an extensive modernization program encompassing the nation's entire air traffic control, navigation, and communications network.

- This organization also provides similar consulting services to the Department of Defense and to Martin Marietta Canada, Ltd., where Martin Marietta leads a six-company team to upgrade Canada's nationwide air traffic system.
- Facilities Management & Professional Services provides facilities and program management at the customer site, including systems development, installation, implementation, operations, and maintenance. This unit also supplies various technical professionals on a task-by-task basis for specialized client requirements.
- Projects include upgrading software for the Social Security Administration's data processing operations in Baltimore (MD); modernization of the U.S. Air Force's inventory management system; and a range of high-technology services, involving artificial intelligence, data base development, and telecommunications data support, to all Department of Defense and civilian agencies within two General Services Administration Regions (including Utah, Wyoming, the Dakotas, California, Hawaii, and Colorado).
- The unit is maintaining information processing facilities for the County of Orange Government (CA), Western Area Power Administration, and the Department of Energy (Albuquerque operations).
- Internal Information Systems is Martin Marietta's principal management information systems supplier, providing applications systems, computer resources, and communications systems to the Corporation and its operating companies.
- The Production, Assembly, and Test Facility, a newly emerging business area, is located in Albuquerque (NM). The facility is designed to handle diverse production requirements and provides a necessary testing ground for the company's latest manufacturing needs.
- Under a recently won U.S. Postal Service \$50.1 million contract, Martin Marietta is manufacturing and installing 267 automated mail-sorting machines. The contract contains an option for 200 additional machines for approximately \$24 million.

Industry Markets

Approximately 31% (\$235 million) of Martin Marietta Information Systems Group's 1989 revenue was derived from various units of Martin Marietta. The remaining \$515 million was derived from the federal government (95-98%) and other sources (2-5%).

Geographic Markets

U.S. offices are located in Chantilly (VA), Orlando, Denver, Colorado Springs, Lanham (MD), Baltimore, Washington, D.C., Orange County (CA), Dayton (OH), and Albuquerque.

International offices are located in Ottawa (Canada), West Germany, Australia, and Turkey.

Computer Hardware and Software

Martin Marietta Information Systems Group has data centers in Orlando (FL), Denver (CO), and Lanham (MD). The main center in Orlando is one of the largest IBM installations in the U.S. Local dial-up or dedicated leased lines are available in all 50 U.S. states. International access is through Telenet.



COMPANY PROFILE

MARTIN MARIETTA DATA SYSTEMS

6303 Ivy Lane
Greenbelt, MD 20770
(301) 982-6500

Frederick H. Hudoff, President
Operating Unit of Martin Marietta
Corporation
Total Employees: 5,500 (6/87)
Total Revenue, Fiscal Year End
12/31/86: \$467,400,000
Noncaptive Computer Services Revenue:
\$238,374,000

THE COMPANY

- Martin Marietta Data Systems (MMDS), formed in 1970, provides remote computing services, professional services, application software products, and turnkey systems.
- Noncaptive revenue in 1986 reached \$238.4 million, showing virtually no change from noncaptive revenue of \$238.7 million in 1985. Operating losses in 1986 were \$3.7 million compared to operating loss of \$10.3 million in 1985. A five-year financial summary follows:

MARTIN MARIETTA DATA SYSTEMS FIVE-YEAR FINANCIAL SUMMARY (\$ thousands)

ITEM	FISCAL YEAR				
	1986	1985	1984	1983	1982
Total revenue	\$467,400	\$429,900	\$361,600	\$278,800	\$244,700
• Percent increase from previous year	9%	19%	30%	14%	31%
Noncaptive (commercial) revenue	\$238,400	\$238,700	\$205,800	\$149,400	\$122,000
• Percent increase from previous year	-	16%	38%	22%	23%
Captive revenue	\$229,000	\$191,200	\$155,800	\$129,400	\$122,700
• Percent increase from previous year	20%	23%	20%	5%	39%
Operating profit (loss)	\$ (3,700)	\$ (10,300)	\$ 18,900	\$ 15,900	\$ 12,400
• Percent increase (decrease) from previous year	(64%)	(154%)	19%	28%	29%

- MMDS management states that operating losses in the commercial packaged software business, together with the termination for convenience of the Department of Labor contract, resulted in the net loss for 1986.
- In October 1986 MMDS sold certain portions of its software business, including the remaining products of two companies it had previously acquired, to On-Line Software International, Inc. for \$35 million. Most of the facilities and personnel associated with these products will also go to On-Line Software. Products involved in the sale include the following:
 - RAMIS II, an information processing system combining data base management and a fourth generation language for application development, was originally acquired with Mathematica, Inc. in June 1983. RAMIS is currently installed in over 1,200 sites worldwide.
 - UFO (User File On-Line), a programmer application development tool, was the primary product of Oxford Software, Inc. which was acquired by Martin Marietta in February 1985.
 - Oxford Software, a systems software developer, had estimated 1984 revenue of \$9.8 million.
 - UFO with an installed base of more than 2,000 sites, is no longer sold as a separate package. MMDS has integrated the product with Consensus (described below).
 - Consensus, introduced in 1986, includes UFO, COBOL/XE, and OPL4. COBOL/Extended Environment (COBOL/XE), the successor to UFO/COBOL, is a productivity tool for programmers writing on-line transaction processing applications. OPL4, a new component, is a fourth generation programmer's productivity tool. Consensus allows programmers to use all three approaches or a choice of approaches to application development.
 - Unison is a line of office automation software products MMDS originally introduced as ITSoftware in 1983. The products include KeepIT (relational data base), CalcIT (spreadsheet), LinkIT (PC to mainframe), PassIT (3270 emulation), SortIT (DOS sort/merge), EditIT (editor), WritIT (word processing), ShowIT (graphics), MailIT (document transfer), StatIT (statistics), and AskIT (front-end to KeepIT). ShareIT, for multiple users of data base management systems, includes a data base machine and an enhanced version of KeepIT.
- During 1986 MMDS also sold the following operations:
 - Hospital Information System (HIS) was sold to Baxter Travenol. HIS, a total patient care system, was introduced in 1983 when MMDS consolidated several software products it had acquired in 1982 and 1983.

- Mathtech, Inc. and Policy Research Group were sold to a group of former MMDS employees. The two professional services companies were part of the 1983 Mathematica acquisition.
- The Hoskyns Group sold its Mark III hotel turnkey systems business.
- MMDS is currently organized into five operating units as follows:
 - The Information Services Division provides systems integration and processing services to government and commercial clients.
 - The Integrated Information Systems Division, a newly formed unit, provides systems integration services primarily in the commercial marketplace.
 - The Field Services Division provides facilities management, conversions, consulting, and professional services to both government and industry.
 - Hoskyns International, a subsidiary based in London, markets and supports all MMDS services overseas. Additionally, Hoskyns is a leading consulting firm in computer-related education. Hoskyns went public with 25% in December 1986.
 - The Accounts Division provides all internal data processing support to Martin Marietta's four operating companies: Aerospace, Aluminum, Basic Products, and Data Systems.
- As of December 31, 1986, MMDS had approximately 5,483 employees, segmented as follows:

U.S.	3,722
International	<u>1,761</u>
	5,483

- Major competition for MMDS products and services comes from:
 - Boeing Computer Services Company, Comserv Corporation, Control Data Corporation, McDonnell Douglas Information Systems Group, and General Electric Information Services Company (GEISCO) for general remote computing services and manufacturing applications software.
 - Boeing Computer Services Company, Electronic Data Systems Corporation, and Computer Sciences Corporation for professional services.

KEY PRODUCTS AND SERVICES

- MMDS' noncaptive revenue sources are estimated for the past three years as follows (\$ millions):

MARTIN MARIETTA DATA SYSTEMS

FISCAL YEAR			Percent Growth	1985	Percent Growth	1984
ITEM		1986				
Computer Services U.S.						
Professional Services		\$ 87.0	9%	\$ 79.8	13%	\$ 70.7
Processing Services		14.3	(73)	52.9	3	51.2
Software Products		37.6	25	30.0	15	26.0
International		<u>99.5</u>	<u>31</u>	<u>76.0</u>	<u>40</u>	<u>54.3</u>
Total Computer Services		\$ 238.4	-	\$ 238.7	18%	\$ 202.2
Noncomputer Services		-	-	-	-	\$ 3.6
Total Noncaptive Revenue		\$ 238.4	-	\$238.7	16%	\$205.8

- As part of Martin Marietta's Information Systems Group, MMDS offers computer and communications services, custom application software, systems integration, facilities management, and professional and educational services to business, industry, and government around the world.
 - MMDS provides information systems and services for applications in manufacturing, government, transportation, engineering, science, and business.
 - MMDS also operates three major computing centers and a nationwide data communication network.
 - The company was working under more than 100 information processing and management contracts at year-end 1986.
- The Information Services Division manages contracts to provide integration services and value-added computing services to both government and commercial marketplaces. Information Services headquarters is located in Greenbelt (MD).
 - The Integration Services Organization provides systems integration services, primarily to government clients. Combining computer hardware, software, and communications, Integration Services provides value-added installation, training, and maintenance services for worldwide systems. Current emphasis is on fiber optics/LAN and optical disk storage opportunities.
 - Currently, Integration Services is supplying computer systems, remote computing services, technical assistance, and training to the U.S. Army's Operational and Test Evaluation Agency. To support the Army's testing at remote sites, MMDS assisted in

- the installation of IBM 4361s within four eight-wheel tractor trailers with six installed permanent sites.
- Integration Services is also supporting a ten-year effort to link over 400 Navy pay/personnel support offices in 50 states and 18 countries in an on-line communications network. In addition, Integration Services provides software, hardware, and communications training for the headquarters and all field sites in five regions. All installations have been completed substantially ahead of time.
- The U.S. Military Academy at West Point awarded MMDS five additional contracts during the year in support of an extensive instructional system. The local area computer network was configured and installed by the company in 1982. The system links several superminicomputers and more than 1,000 terminals with software, peripherals, and a communications network.
- MMDS also received an \$8.3 million contract ceiling increase permitting the Navy to issue delivery orders under the Naval Readiness programs, initially contracted for in 1984, based in China Lake (CA). The program provides integrated systems to support aviation and maintenance training at active and reserve air stations worldwide as well as on board aircraft carriers.
- The Computing Services Organization provides value-added computing, professional services, communications, and networking to government and commercial clients. In addition, Computing Services provides systems development and integration, consulting, and advisory services to foreign countries through the federal government and U.S.-based companies.
- MMDS operates three data centers built around IBM and CYBER equipment.
 - The Orlando Data Center is a showcase for IBM and serves as its commercial data center providing value-added computing services to customers worldwide. Customers have access to over 200 software packages and a technical support staff to assist them in full systems development, routine application system processing, or electronic data interchange.
 - The CYBER Center in Denver supplies scientific computing services for Martin Marietta's aerospace work.
 - The data center in Washington, D.C. supports the Federal Aviation Administration's modernization program.

- In addition, MMDS operates 20 IBM 43XX computer facilities. Fourteen of these facilities provide services to other divisions of Martin Marietta. The other six are for commercial and federal customers. The software used at these sites ranges from IBM DOS to the MVS and VM operating systems, and includes such program products as TSO, CICS, IMS, and PROFS. Several systems operate under OS/VS1.
- The Integrated Information Systems Division, as a prime contractor, provides program management and integration services which include planning, design, development, implementation, operation, and future upgrading of major complex non-government information systems. Initially focusing on the manufacturing marketplace, this division is headquartered in Greenbelt (MD).
- Included in Integrated Information Systems is:
 - MMDS' MAS Family of Software that provides companies with materials management, finance and administration, and human resources solutions. Some modules of MAS have cross-industry applications and some are industry specific. The MAS products are sold as software products or turnkey systems and are available on the MMDS network service. There are over 700 installations of MAS worldwide.
 - MAS-Manufacturing is available on IBM, DEC, and HP computers and consists of nine modules as follows:
 - Master Scheduling.
 - Inventory Control.
 - Manufacturing Engineering.
 - Purchasing Control.
 - Cost Generation.
 - Engineering Control.
 - Cost Management.
 - Manufacturing Control.
 - Material Lot Tracking.
 - MAS-Financials are a series of five integrated modules. The software is integrated with MAS-Manufacturing and is available on IBM, DEC, and HP systems. Modules include:
 - General Ledger.
 - Accounts Receivable.
 - Accounts Payable.
 - Customer Order Processing.
 - Sales History.
 - MAS-Human Resources consists of three fully integrated modules for human resource management. The products are available on IBM 30XX and 4300 line. Modules are:

- MAS-Payroll.
 - MAS-Personnel.
 - MAS-Benefits.
- The Field Services Division provides on-site facilities management services, hardware and software conversions, custom-built systems, and consulting.
 - Personnel have expertise with systems such as the IBM 3081 main-frame, IBM 4341s and 4381s, Prime 750s, DEC VAX 11/780s, Honeywell, and Unisys equipment, CDC CYBER machines, and the ELXSI microprocessor. Functional disciplines supported include electrical power generation, telephone business systems, management of natural resources, military systems testing, medical claims processing, simulation of aviation engineering systems, classified government projects, aviation training, county government services, and nuclear research.
 - The division's professional services staff specializes in solving technical and functional problems in engineering, manufacturing, banking, finance, personnel, medical, and insurance systems. This group supports clients' specific needs in the areas of systems design, software application modification and implementation, technical consulting, and data center management, as well as programming and hands-on training.
 - Contract examples include the following:
 - The Board of Supervisors of Orange County (CA), awarded MMDS an additional \$5.2 million contract to its existing on-site facilities management program won in 1985. MMDS currently operates and manages the county's data center, which processes a variety of applications for the county's two million residents, including tax assessments, health and welfare benefits, and county payroll.
 - The Department of Defense renewed its data processing services contract with MMDS to manage and support its program which administers health and medical benefits for approximately 10 million retired military personnel and dependents of military personnel worldwide. This is the second competitive award on the project to Martin Marietta which has now supported the Defense Department's Office of Civilian Health and Medical Programs of the Uniformed Services (OCHAMPUS) program for six years.
- Hoskyns International is one of the largest U.K. information services companies, providing consulting and system building, turnkey systems, application software, facilities management, and education and training services to more than 2,000 companies.
 - Over the past 10 years, Hoskyns has achieved an average annual growth rate of more than 30%.

- The principal market for Hoskyns' products and services are the manufacturing, distribution, services, financial, and public sectors. Clients include over 70 of the London Times top 100 companies.
- In 1986 Hoskyns was awarded manufacturing and financial control systems contracts by Kodak and Rolls Royce and continued implementation of systems at Dunlop Aviation and at Shearson, a leading brokerage firm with an on-line system to support the U.K.'s modernized stock exchange.
- Hoskyns, which was previously a wholly owned subsidiary of Martin Marietta, achieved a full listing on the London Stock Exchange in December 1986 and 25% of its stock was sold in a public offering.
- The Accounts Division manages and provides information systems and services to the Martin Marietta Corporation. Its primary locations are in Bethesda and Middle River (MD), Denver (CO), Orlando (FL), and Washington, D.C.

INDUSTRY MARKETS

- INPUT estimates that 40-50% of MMDS's 1986 noncaptive revenue was derived from the federal government or its prime contractors. The remaining revenue was derived from various industries, including manufacturing, banking and finance, insurance, and medical.

GEOGRAPHIC MARKETS

- Approximately 77% of MMDS' 1986 noncaptive revenue came from the U.S. and 23% was derived from international sources.
- U.S. offices are in Atlanta, Chicago, Cleveland, Dallas, Denver, Hartford, Los Angeles, New York, Philadelphia, Salem, and the metropolitan Washington, D.C. area.
- International sales offices are in England and Europe. Other representatives market MMDS' products in Canada, Europe, Australia, and in the Middle and Far East.

COMPUTER HARDWARE AND SOFTWARE

- MMDS' data centers are located in Orlando (FL), Denver (CO), Washington, D.C., and London. The main data center in Orlando is one of the largest IBM installations in the U.S. Local dial-up or dedicated leased lines are available in all 50 U.S. states. International access is through Tymnet.
- As one of the largest IBM installations in the U.S. and one of the ten largest in the world, the Orlando Data Center features eight IBM 308X or larger CPUs running under MVS/XA, VM/SP. Maintaining a documented 98% availability, the Orlando Data Center currently handles the following daily volumes: over one million on-line transactions; over 14,000 batch jobs; and over 8,000 tape mounts.

- MMDS currently offers most of the major data base systems that are compatible with IBM equipment. These include:
 - IDMS/DC and CV.
 - RAMIS II.
 - ADABAS.
 - IMS DB/DC.
 - SYSTEM 2000.
 - Database 2.
 - IDMS.
 - Model 204.
- For system development efforts, MMDS uses and supports all of the following languages:
 - IBM COBOL VS.
 - ANS COBOL V3 Library (DOS).
 - FORTRAN IV G1.
 - WATFIV.
 - ASSEMBLER OS/VS.
 - COBOL Interactive Debug.
 - APL.
 - PL/I Checkout Compiler.
 - Optimizer III, by CAPEX.
 - ANSCOBOL V3 COMPILER (DOS).
 - COBOL VS.
 - FORTRAN IV H Extended V2.3.
 - ASSEMBLER H.
 - VS BASIC.
 - FORTRAN Interactive Debug.
 - APT.
 - PL/I Optimizing Compiler.
 - BTS II.
- MMDS also provides several on-line interactive systems. Depending on the complexity of the user's requirements, the following systems are available:
 - TSO/ISPF/FSE.
 - WYLBUR.
 - CMS.
 - COBOL DEBUG.
 - GIS/VS.
- Once connected into the network, users may elect to use their own software, which can be accommodated in most languages including COBOL, PL/I, FORTRAN, Assembler, VSBASIC, and RPG.
- MMDS operates one of the largest data communications networks in the world. This private network interconnects MMDS customers as well as Martin Marietta corporate entities to the MMDS data centers. The primary network

nodes, located in Los Angeles, Denver, Albuquerque, Chicago, Orlando, New York, and Washington, D.C., currently carry over two billion bytes of data per day. The network supports more than 7,000 terminals.

- Network access is available 24 hours a day, 7 days a week from anywhere in the continental U.S., Canada, Hawaii, Alaska, and the U.S. Virgin Islands. In addition to the major network nodes, access is provided via mini-nodes, TYMNET, TELENET, and In-WATS.
- In remote locations that are not serviced by local calls to the nearest MMDS, TELENET, or TYMNET node, users may call an MMDS toll-free telephone service.

FINANCIAL UPDATE TO PROFILE DATED JULY 1984

MARTIN MARIETTA DATA SYSTEMS

6303 Ivy Lane
Greenbelt, MD 20770
(301) 982-6500

Richard J. Walters, President
Operating Unit of Martin Marietta
Corporation
Total Employees: 4,600
Total Revenue, Fiscal Year End
12/31/84: \$361,600,000
Total Noncaptive Revenue:
\$205,800,000
Total Noncaptive Computer Services
Revenue: \$202,200,000

MARTIN MARIETTA DATA SYSTEMS FIVE-YEAR FINANCIAL SUMMARY (\$ thousands)

ITEM \ FISCAL YEAR	1984	1983	1982	1981	1980
Noncaptive (commercial) revenue	\$ 205,800	\$ 149,400	\$ 122,000	\$ 99,164	\$ 78,088
• Percent increase from previous year	38%	22%	23%	27%	43%
Captive revenue	\$ 155,800	\$ 129,400	\$ 122,700	\$ 88,013	\$ 58,307
• Percent increase from previous year	20%	5%	39%	51%	49%
Total revenue	\$ 361,600	\$ 278,800	\$ 244,700	\$ 187,177	\$ 136,395
• Percent increase from previous year	30%	14%	31%	37%	45%

SOURCE OF REVENUE

- MMDS's total noncaptive revenue in 1984 was \$205.8 million. Of this, approximately \$3.6 million was derived from noncomputer services consulting work in policy research and strategic planning. Noncaptive revenue sources for the past two years are estimated as follows (\$ millions):

*acquired
Oxford Software
4/3/85*

MARTIN MARIETTA DATA SYSTEMS

	<u>1984</u>	<u>Percent Growth</u>	<u>1983</u>
U.S.			
Processing Services (RCS)	\$ 51.2	9%	\$ 47.0
Software Products	26.0	38	18.9*
Professional Services	70.7	91	37.0*
International	<u>54.3</u>	<u>25</u>	<u>43.5</u>
Total Computer Services	\$ 202.2	38%	\$ 146.4
Noncomputer Services	<u>3.6</u>	<u>20</u>	<u>3.0</u>
Total Noncaptive Revenue	\$ 205.8	38%	\$ 149.4

*1983 figures include five months' revenue from Mathematica.

COMPANY HIGHLIGHT

MARTIN MARIETTA DATA SYSTEMS

6303 Ivy Lane
Greenbelt, MD 20770
(301) 982-6500

Richard J. Walters, President
Operating Unit of Martin Marietta
Corporation
Total Employees: 4,100
Total Revenue, Fiscal Year End
12/31/83: \$278,800,000
Total Noncaptive Revenue:
\$149,400,000
Total Computer Services Revenue:
\$146,400,000

THE COMPANY

- Martin Marietta Data Systems (MMDS), formed in 1970, provides remote computing services, software products, professional services, and turnkey systems. Marketing emphasis is in manufacturing software and related services, data base management and communications software, and government professional services contracts. Future areas for expansion of software product lines include computer integrated manufacturing, strategic architecture design, and the development of intelligent workstations.
- MMDS has achieved an annual growth rate of over 20% in its noncaptive revenue in each of the last five years. Growth has come from several large professional services contracts in the government sector, acquisition of a major software firm, and increased usage of remote computing services by government agencies. Included in MMDS's results for 1983 is five months' revenue from Mathematica. A five-year summary of revenue follows:

MMDS
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands)

FISCAL YEAR ITEM	1983	1982	1981	1980	1979
Noncaptive (commercial) revenue	\$ 149,400	\$ 122,000	\$ 99,164	\$ 78,088	\$ 54,689
• Percent increase from previous year	22%	23%	27%	43%	46%
Captive revenue	\$ 129,400	\$ 122,700	\$ 88,013	\$ 58,307	\$ 39,227
• Percent increase from previous year	5%	39%	51%	49%	23%
Total revenue	\$ 278,800	\$ 244,700	\$ 187,177	\$ 136,395	\$ 93,916
• Percent increase from previous year	14%	31%	37%	45%	35%

- In June 1983 Martin Marietta acquired Mathematica, Inc., the Princeton (NJ) software developer of data base management and decision support products. Mathematica was acquired for \$30.8 million in cash and securities and had fiscal 1982 (June) sales of \$36.2 million.
- MMDS is organized into five operating units:
 - U.S. operations markets and supports all MMDS products and services sold to government and commercial clients.
 - Mathematica develops and markets system software products for data base management, nonprocedural programming, and decision support systems. It also provides professional services, policy research, and strategic planning services to government and commercial clients.
 - ITSoftware develops and markets software products for the IBM PC sold through direct sales and distributors.
 - Hoskyns International, based in London, markets and supports all MMDS services overseas. Additionally, Hoskyns is a leading consulting firm in computer-related education.
 - Accounts Division provides all internal data processing support to Martin Marietta's four operating companies: Aerospace, Aluminum, Basic Products, and Data Systems.
- Approximately 3,000 MMDS employees are located in the U.S., and 1,000 are in international locations.

MARTIN MARIETTA DATA SYSTEMS

- Major competition for MMDS services comes from:
 - Boeing Computer Services Company, Comserv Corporation, Control Data Corporation, McDonnell Douglas Automation Company (MCAUTO), and General Electric Information Services Company (GEISCO) for general remote computing services and manufacturing applications.
 - Cullinet Software and Cincom Systems for data base management software products.
 - Management Science America, McCormack & Dodge Corporation, and Software International Corporation (subsidiary of GEISCO) for financial applications software.
 - Boeing Computer Services Company, Electronic Data Systems Corporation, and Computer Sciences Corporation for professional services.

KEY PRODUCTS AND SERVICES

- MMDS's total noncaptive revenue in 1983 was \$149.4 million. Of this, approximately \$3 million was derived from noncomputer services consulting work in policy research and strategic planning. Noncaptive revenue sources for the past two years are estimated as follows (\$ millions):

	<u>1983</u>	<u>Percent Growth</u>	<u>1982</u>
U.S.			
Processing Services (RCS)	\$ 47.0	21%	\$ 39.0
Software Products*	18.9	42	13.3
Professional Services*	37.0	68	22.0
International	<u>43.5</u>	<u>(9)</u>	<u>47.7</u>
Total Computer Services	\$ 146.4	20%	\$ 122.0
Noncomputer Services	<u>3.0</u>	<u>-</u>	<u>-</u>
Total Noncaptive Revenue	\$ 149.4	22%	\$ 122.0

*1983 figures include five months' revenue from Mathematica.

- Revenue from U.S.-based services was \$102.9 million in 1983, a 38% increase from \$74.3 million in 1982. Gains are largely attributed to increased professional services contracts from the federal government and the acquisition of Mathematica.
- The 9% decline in international revenue was attributed to currency translations between the U.S. and the United Kingdom.

- Through its remote computing service, MMDS provides a variety of manufacturing and general business application products on IBM and CDC mainframes. Marketing emphasis for network services is in manufacturing, government, petrochemical, and services industries, and in selling application solutions.
 - MMDS has developed a number of proprietary application products that are offered on the network and sold as software products. The primary product is the Modular Application System (MAS) for manufacturing applications. MAS-Payroll, MAS-Personnel, MAS-Decision Support, and MAS-Project Management are new additions to the original system.
 - Other new products added to the network are:
 - PROFS and Script for office automation.
 - ADABAS, BTS II, Data Dictionary, GIS/VS, Librarian, and Model 204 for data management and related processing.
 - In January 1984 MMDS introduced Subscription Service, a fixed-price timesharing option for network users. The option is available on IBM processors in VM or MVS operating environments and allows users to purchase a block of computer resources at a fixed price.
 - A profile of major applications offered on the network is listed in Exhibit A.
- MMDS's Modular Application System (MAS) is a series of software packages that provides companies with materials management, finance and administration, decision support, and human resources solutions. Some modules of MAS have cross-industry applications and some are industry specific. The MAS product line is sold as software products or turnkey systems and is available on the MMDS network service. There are over 700 installations of MAS worldwide.
 - MAS-Manufacturing is available on IBM, DEC, and Hewlett-Packard computers and consists of six major modules:
 - Master Production Scheduling.
 - Inventory Control.
 - Manufacturing Control.
 - Purchasing.
 - Cost Control.
 - Engineering Control.
 - MAS-Financials are a series of eight fully integrated modules that address a company's accounting, sales, materials management, and distribution needs. The software currently operates on an HP 3000 minicomputer. Future releases will include versions for IBM's 4300 and 30XX series of computers and DEC's VAX line of minicomputers. Modules available are:

EXHIBIT A

MARTIN MARIETTA DATA SYSTEMS NETWORK PROFILE

APPLICATION AREA/PRODUCT NAME

- OPERATING ENVIRONMENT
 - IBM 4341, 30XX; VMS, MVS
 - CDC CYBER 170; NOS/BE
- PROGRAMMING LANGUAGES
 - APL — PL/1
 - BASIC — RPG
 - COBOL — SNOBOL
 - FORTRAN — WATFIV
- DATA BASE MANAGEMENT SYSTEMS & TOOLS
 - ADABAS — INQUIRE
 - BTS II — LIBRARIAN
 - CICS — MARK IV/4260
 - IDMS/CULPRIT — MODEL 204
 - DATA DICTIONARY — PANVALET
 - DYL-260/280 — RAMIS II
 - EASYTRIEVE — SYSTEM 2000
 - GIS/VS — TSO
 - IDMS/DC — WYLBUR
 - IMS DB/DC
- PRODUCTIVITY AND CONVERSION AIDS
 - BRIDGE — FSE
 - CA-OPTIMIZER — ISPF
 - CMS — QUICKJOB III
 - DUO
- BUSINESS PLANNING AND DECISION SUPPORT
 - EMBASSY TAX PLANNING
 - MAS-DECISION SUPPORT
 - MAS-M
 - MBA
 - PACII
- HUMAN RESOURCES
 - MAS-PAYROLL
 - MAS-PERSONNEL
- PROJECT PLANNING AND MANAGEMENT
 - MAS-PROJECT MANAGEMENT
 - MINIPERT
 - PACII
 - PMS IV
 - TRMS
 - TRMS:PS
- OFFICE AUTOMATION
 - PROFS
 - SCRIPT (IBM OR WATERLOO)

APPLICATION AREA/PRODUCT NAME

- MANUFACTURING AND INDUSTRIAL ENGINEERING
 - APT — MIDAS
 - DIACS II — MPCS
 - HMS
 - MAS-MANUFACTURING
- CIVIL ENGINEERING
 - HEC1
 - HEC2
 - ICES
- ELECTRICAL ENGINEERING
 - ACAP
 - ASTAP
 - ELECTRICAL WIRING DATA SYSTEMS
 - MECA
 - SAMDA
 - ZTRAN
- MECHANICAL ENGINEERING
 - TRACE
- STRUCTURAL ENGINEERING
 - MSC/NASTRAN
 - STAAD III
- MATHEMATICS AND STATISTICAL ANALYSIS
 - BMDP — SAS/GRAPH
 - IMSL — SCSS
 - MPS III — SICON
 - MPSX370 — SPSS BATCH SYSTEM
 - SAS — TROLL
 - SAS/ETS
- SIMULATION AND MANAGEMENT SCIENCE
 - CSMPIII
 - GPSS V
- GRAPHICS AND PLOTTING
 - CALCOMP GRAPHICS
 - DISSPLA
 - SAS/GRAPH
 - TELL-A-GRAF
 - ULTRA PLOT ROUTINES
 - ZCHART
- LOGISTICS
 - OLSA

- . General Ledger.
 - . Accounts Receivable.
 - . Accounts Payable.
 - . Fixed Assets and Depreciation.
 - . Purchase Order and Receiving.
 - . Customer Order Processing.
 - . Sales History.
 - . Inventory Management.
- MAS-Personnel and Payroll consists of three fully integrated modules for human resource management. The products are available on IBM 30XX and 4300, HP 3000, and the DEC VAX line. Modules are:
- . MAS-Payroll.
 - . MAS-Personnel.
 - . MAS-Benefits.
- MAS-Project Planning offers manufacturers an advanced management information system for program management. The system currently operates on IBM 30XX, 4300, and the DEC VAX series. Capabilities include network scheduling; multiple resource allocation, tracking, and projection; "what-if" analysis; sophisticated graphics; and flexible reporting formats.
- MAS-Decision Support is an interactive planning, modeling, and analysis tool that supports unstructured and semistructured decision making. It is available for IBM 370, 4300, and 30XX systems; HP 3000; and DEC VAX computers. The system consists of 25 applications including plotting and histograms, table and multidimensional arrays, Box Jenkins, statistical libraries, a hierarchical data manager, and Monte Carlo Risk.
- MAS-M, sold on a turnkey system basis or as a software product, is marketed to light manufacturers, wholesalers, and distributors. Divisions of large corporations or companies with less than \$50 million in revenue are primary candidates for MAS-M.
- . Written in Basic-Plus-2, it is available on DEC PDP-11 and VAX machines running under VMS.
 - . MAS-M is a fully integrated, on-line business system made up of 10 interactive elements covering inventory management, distribution control, and financial control. Individual application modules are:
 - Accounts receivable.
 - Accounts payable.
 - General ledger.
 - Order processing.
 - Invoicing.

MARTIN MARIETTA DATA SYSTEMS

- Inventory control.
 - Inventory accounting.
 - Bill of materials.
 - Materials requirements planning.
 - Purchasing.
- In 1982 and 1983, MMDS acquired several software products from different sources and combined them into a Hospital Information System (HIS). HIS is a total patient care system designed to provide a single source for all patient information through a number of integrated modules. Totally on-line, the system provides instant access to all patient information including demographic and historical data, order profile, test results, diagnoses, and procedures.
 - HIS is sold primarily as a software product for the IBM 4300 and 30XX series. MMDS has installed approximately six HIS systems, several of which are in federal government hospitals.
 - Modules of HIS are:
 - Registration/Admission/Discharge/Transfer (RADT).
 - Laboratory.
 - Radiology.
 - Pharmacy.
 - Nursing.
 - Dietary.
 - Physical Therapy.
 - DRG.
 - Physicians.
 - Outpatient Clinics.
 - Medical Records.
 - Ancillary Services.
- Software products marketed by Mathematica include both mainframe and microcomputer products for data base management, application development, and data communications. All software operates on IBM and IBM-compatible computers. On a calendarized basis, Mathematica's 1983 software revenue was \$24.9 million, a 28% increase over 1982 revenue of \$19.4 million. Foreign software sales were \$5 million in 1983 and \$3.4 million in 1982.
 - Mathematica's primary product is RAMIS II[®], a complete information processing system combining data base management and a fourth-generation language for application development. RAMIS is currently installed in over 1,200 sites worldwide, including over 20 service bureaus.
 - In 1983 Mathematica introduced RAMIS II English, one of two commercially available natural language products. English uses artificial intelligence technology to enable people to converse with a computer in ordinary English.

MARTIN MARIETTA DATA SYSTEMS

- In 1984 Mathematica introduced RAMIS II/PC bringing the full capabilities of mainframe RAMIS II to IBM PC XT/370 users. Mathematica also began marketing XT/370 computers as an IBM value-added distributor.
- ATLAS is the lead product of a family of data communications products marketed since 1982.
- A complete list of products marketed by Mathematica is presented in Exhibit B.
- During 1983 MMDS introduced the ITSoftware series for the IBM Personal Computer. The foundation for the product line is KeepIT, a relational data base management system. ITSoftware is sold through a combination of direct sales and distributors.
 - Products and prices of ITSoftware are:

• KeepIT (relational data base)	\$450
• CalcIT (spreadsheet)	400
• LinkIT (PC to mainframe)	150
• PassIT (3270 emulation)	250
• SortIT (DOS sort/merge)	125
• EditIT (editor)	150
• WritIT (word processing)	500
• ShowIT (graphics)	250
• MailIT (document transfer)	250
• StatIT (statistics)	500
• AskIT (front-end to KeepIT)	100
 - In the Fall of 1984 a new product, ShareIT, will be available for multiple users of data base management systems. It is a combination of hardware and software, which will bundle the data base machine with an enhanced version of KeepIT for multiple users of DBMS. Price of the product will be \$1,750 for a Cogent data base machine board plus the cost of the software, which varies according to the number of workstations supported: software for 2-3 workstations will be \$850; for 10 or more workstations the cost will be \$1,450.
- MMDS derived about \$34 million in U.S. revenue from professional services. About 53% came from commercial contracts and 47% came from federal government agencies.
 - MMDS professional services experience is in systems integration, instructional systems, local networking, and facilities management.
 - Recent contract awards include:
 - An eight-year contract valued at \$102 million with the U.S. Department of Labor to design, install, and maintain a com-

EXHIBIT B
MATHEMATICA'S SOFTWARE PRODUCTS

PRODUCTS	PRICE*	HARDWARE AND SYSTEM REQUIREMENTS
MAINFRAME SOFTWARE		
Basic RAMIS II System		
DBM (Data Base Manager), Reporter, Records Management, Executive, REF (External File Interface), Graph, IRM (Interactive Request Modification), Screen Manager, RAMHELP, RAMERROR, RAMSERVICE, Shared Memory Installation, One Communications Interface, One Operating System Interface	\$45,000-90,000	IBM 370, 30XX, 43XX, and compatible: DOS/VSE, OS/VS1, MVS, VM/CMS
Basic RAMIS II-RO (Reporting Only) System		
Same as Basic RAMIS II System but excluding DBM and Records Management	\$27,000-54,000	"
RAMIS II Optional Components		
RELATE	\$ 7,875-15,750	"
English Comprehension	\$13,500-27,000	
FSM (Formatted Screen Manager)	\$ 6,750-13,500	
Multiple Reports (84.2)	\$ 4,500- 9,000	
RAMLink (Personal Computer Link)	\$ 4,500- 9,000	
Automatic Data Base Interface (each)	\$ 3,375- 6,750	
PLOT (High Resolution Graphics)	\$ 5,625-11,250	
APL Interface	\$ 4,500- 9,000	
SAS Interface	\$ 1,125- 2,250	
RPI (Procedural Language Interface)	\$ 7,875-15,750	
RPI-CICS Interface	\$ 3,375- 6,750	
DFO (Financial Planning Option)	\$ 3,375- 6,750	
Usage Accounting	\$ 1,125- 2,250	
DBIS (Data Base Information System)	\$ 6,750-13,500	
READ DOS/OS	\$ 3,375- 6,750	
Additional Communications Interface	\$ 7,875-15,750	
Additional Operating System Interface	\$ 3,375- 6,750	
MARVEL	\$ 4,500- 9,000	
SGS (Screen Generator)	\$ 4,000- 8,000	
RAMLEARN Modules (Annual License Fee)		
Reporter	\$ 3,000- 7,000	"
REF	\$ 1,500- 3,500	
ATLAS Data Communications Systems and Related Components		
ATLAS For RAMIS II Usage Only	\$ 4,500- 9,000	IBM 370, 30XX, 43XX, and
ATLAS Full Usage	\$18,000-36,000	Compatible: DOS/VSE and
ATLAS-RPI Interface	\$ 3,000- 7,000	Other DOS-Based Operating
DES (Data Entry System)	\$ 8,000-12,000	Systems
TITAN	\$ 8,000-16,000	
PERSONAL COMPUTER SOFTWARE		
Basic RAMIS II/PC	\$ 1,395	
English Comprehension Release II	\$ 1,195	IBM PC XT/370
Relate	\$ 285	
RAMLEARN (Annual License Fee)	\$ 50	

* Mainframe prices are based on a 25-year license fee that varies, depending on CPU performance rating.

MARTIN MARIETTA DATA SYSTEMS

puterized information system for the Department's Division of Federal Employees' Compensation (DFEC).

- An \$8 million Department of Defense contract to provide data processing facilities management services to the Office of the Civilian Health and Medical Program of the Uniformed Services (OCHAMPUS).
- A subcontract with Martin Marietta Corporation to provide software validation and various technical support services for the air traffic control system upgrade project for the Federal Aviation Administration.
- With the acquisition of Mathematica, MMDS expanded its professional services to include the consulting and research capabilities of Math-tech, Inc. and the Policy Research Group. Calendarized revenue from these two operations amounted to \$14 million in 1983.
- Mathtech's areas of systems development and consulting expertise is in:
 - Energy and natural resources.
 - Telecommunications.
 - Manufacturing systems.
 - Environmental analysis.
 - Management and decision support.
 - Legal services and litigation.
 - Bio-medical information.
 - Defense and intelligence.
- The Policy Research group of MMDS provides analysis for a wide range of public policy issues primarily to the federal government, including employment, retirement and pensions, public assistance, and health. Although almost all of the consulting projects are noncomputer services activities, the organization does perform a small amount of computer systems analysis and design. Noncomputer services revenue from this organization is estimated at \$6 million in 1983, of which \$3 million was credited to MMDS upon completion of the acquisition.
- International revenue of \$43.5 million in 1983 came from Europe, England, Australia, Africa, and Middle and Far Eastern countries.
- The Hoskyns Group is one of the leading professional services companies in the United Kingdom. It specializes in systems integration and developing product applications in markets such as manufacturing, retailing, distribution, banking and finance, insurance, hotels, and government. In addition, Hoskyns is a world leader in computer-related education, having trained more than 27,000 students from 60 countries.

MARTIN MARIETTA DATA SYSTEMS

- Hoskyns markets MMDS's remote computing services and software products in Europe and several specialty products that are not available in the U.S. These are:
 - Mark II, a turnkey system for the hotel industry. The system is designed for hotels with 25 rooms and up. It offers front and back office applications including foreign currency exchange, point-of-sale guest charging, and telephone management.
 - The Kapiti International Banking System (KIBS) is a turnkey system for both retail and wholesale banking applications.
 - The Retail Business System is sold as a software product and turnkey system to retailers of all sizes. The product is customized to individual requirements and will support a number of applications from warehousing to financial control.

GEOGRAPHIC MARKETS

- Approximately 71% of MMDS's 1983 noncaptive revenue came from the U.S. and 29% was derived from international sources.
 - U.S. offices are in Atlanta, Boston, Chicago, Cleveland, Denver, Hartford, Houston, Los Angeles, New York, Philadelphia, Princeton, San Francisco, and Washington (DC).
 - International sales offices are in England and Europe. Other representatives market MMDS's products in Canada, Europe, Australia, Africa, South America, and in the Middle and Far East.

COMPUTER HARDWARE

- MMDS's data centers are located in Orlando (FL), Denver (CO), and London. The main data center in Orlando is one of the largest IBM installations in the U.S. Local dial-up or dedicated leased lines are available in all 50 U.S. states. International access is through Tymnet.
- MMDS uses the following computers in its data centers:
 - Orlando:
 - IBM 4341s.
 - IBM 3033s.
 - IBM 3084s.
 - IBM 3081s.
 - Operating systems for the above include MVS/JES, VM/CMS, TSO, and CICS.

MARTIN MARIETTA DATA SYSTEMS

- Denver:
 - . CDC CYBER 170/730, NOS/BE.
 - . CDC CYBER 170/720, NOS.
- London:
 - . IBM 4341, VM/CMS.
 - . IBM 370, DOS/VSE.
 - . ICL 2950, DME.
 - . ICL 2903/4, Exec 3.
 - . ICL 1900, George 2T.
- Mathematica has an IBM 4341 installed in Princeton (NJ) for development of software products.

COMPANY HIGHLIGHT

MARTIN MARIETTA DATA SYSTEMS

6303 Ivy Lane
Greenbelt, MD 20770
(301) 982-6500

Richard J. Walters, President
Operating Unit of Martin Marietta
Corporation
Total Employees: 4,100
Total Revenue, Fiscal Year End
12/31/83: \$278,800,000
Total Noncaptive Revenue:
\$149,400,000
Total Computer Services Revenue:
\$146,400,000

THE COMPANY

- Martin Marietta Data Systems (MMDS), formed in 1970, provides remote computing services, software products, professional services, and turnkey systems. Marketing emphasis is in manufacturing software and related services, data base management and communications software, and government professional services contracts. Future areas for expansion of software product lines include computer integrated manufacturing, strategic architecture design, and the development of intelligent workstations.
- MMDS has achieved an annual growth rate of over 20% in its noncaptive revenue in each of the last five years. Growth has come from several large professional services contracts in the government sector, acquisition of a major software firm, and increased usage of remote computing services by government agencies. Included in MMDS's results for 1983 is five months' revenue from Mathematica. A five-year summary of revenue follows:

MMDS
FIVE-YEAR FINANCIAL SUMMARY
(\\$ thousands)

FISCAL YEAR ITEM	1983	1982	1981	1980	1979
Noncaptive (commercial) revenue	\$ 149,400	\$ 122,000	\$ 99,164	\$ 78,088	\$ 54,689
• Percent increase from previous year	22%	23%	27%	43%	46%
Captive revenue	\$ 129,400	\$ 122,700	\$ 88,013	\$ 58,307	\$ 39,227
• Percent increase from previous year	5%	39%	51%	49%	23%
Total revenue	\$ 278,800	\$ 244,700	\$ 187,177	\$ 136,395	\$ 93,916
• Percent increase from previous year	14%	31%	37%	45%	35%

- In June 1983 Martin Marietta acquired Mathematica, Inc., the Princeton (NJ) software developer of data base management and decision support products. Mathematica was acquired for \$30.8 million in cash and securities and had fiscal 1982 (June) sales of \$36.2 million.
- MMDS is organized into five operating units:
 - U.S. operations markets and supports all MMDS products and services sold to government and commercial clients.
 - Mathematica develops and markets system software products for data base management, nonprocedural programming, and decision support systems. It also provides professional services, policy research, and strategic planning services to government and commercial clients.
 - ITSoftware develops and markets software products for the IBM PC sold through direct sales and distributors.
 - Hoskyns International, based in London, markets and supports all MMDS services overseas. Additionally, Hoskyns is a leading consulting firm in computer-related education.
 - Accounts Division provides all internal data processing support to Martin Marietta's four operating companies: Aerospace, Aluminum, Basic Products, and Data Systems.
- Approximately 3,000 MMDS employees are located in the U.S., and 1,000 are in international locations.

MARTIN MARIETTA DATA SYSTEMS

- Major competition for MMDS services comes from:
 - Boeing Computer Services Company, Comserv Corporation, Control Data Corporation, McDonnell Douglas Automation Company (MCAUTO), and General Electric Information Services Company (GEISCO) for general remote computing services and manufacturing applications.
 - Cullinet Software and Cincom Systems for data base management software products.
 - Management Science America, McCormack & Dodge Corporation, and Software International Corporation (subsidiary of GEISCO) for financial applications software.
 - Boeing Computer Services Company, Electronic Data Systems Corporation, and Computer Sciences Corporation for professional services.

KEY PRODUCTS AND SERVICES

- MMDS's total noncaptive revenue in 1983 was \$149.4 million. Of this, approximately \$3 million was derived from noncomputer services consulting work in policy research and strategic planning. Noncaptive revenue sources for the past two years are estimated as follows (\$ millions):

	<u>1983</u>	<u>Percent Growth</u>	<u>1982</u>
U.S.			
Processing Services (RCS)	\$ 47.0	21%	\$ 39.0
Software Products*	18.9	42	13.3
Professional Services*	37.0	68	22.0
International	<u>43.5</u>	<u>(9)</u>	<u>47.7</u>
Total Computer Services	\$ 146.4	20%	\$ 122.0
Noncomputer Services	<u>3.0</u>	<u>-</u>	<u>-</u>
Total Noncaptive Revenue	\$ 149.4	22%	\$ 122.0

*1983 figures include five months' revenue from Mathematica.

- Revenue from U.S.-based services was \$102.9 million in 1983, a 38% increase from \$74.3 million in 1982. Gains are largely attributed to increased professional services contracts from the federal government and the acquisition of Mathematica.
- The 9% decline in international revenue was attributed to currency translations between the U.S. and the United Kingdom.

- Through its remote computing service, MMDS provides a variety of manufacturing and general business application products on IBM and CDC mainframes. Marketing emphasis for network services is in manufacturing, government, petrochemical, and services industries, and in selling application solutions.
 - MMDS has developed a number of proprietary application products that are offered on the network and sold as software products. The primary product is the Modular Application System (MAS) for manufacturing applications. MAS-Payroll, MAS-Personnel, MAS-Decision Support, and MAS-Project Management are new additions to the original system.
 - Other new products added to the network are:
 - PROFS and Script for office automation.
 - ADABAS, BTS II, Data Dictionary, GIS/VS, Librarian, and Model 204 for data management and related processing.
 - In January 1984 MMDS introduced Subscription Service, a fixed-price timesharing option for network users. The option is available on IBM processors in VM or MVS operating environments and allows users to purchase a block of computer resources at a fixed price.
 - A profile of major applications offered on the network is listed in Exhibit A.
- MMDS's Modular Application System (MAS) is a series of software packages that provides companies with materials management, finance and administration, decision support, and human resources solutions. Some modules of MAS have cross-industry applications and some are industry specific. The MAS product line is sold as software products or turnkey systems and is available on the MMDS network service. There are over 700 installations of MAS worldwide.
 - MAS-Manufacturing is available on IBM, DEC, and Hewlett-Packard computers and consists of six major modules:
 - Master Production Scheduling.
 - Inventory Control.
 - Manufacturing Control.
 - Purchasing.
 - Cost Control.
 - Engineering Control.
 - MAS-Financials are a series of eight fully integrated modules that address a company's accounting, sales, materials management, and distribution needs. The software currently operates on an HP 3000 minicomputer. Future releases will include versions for IBM's 4300 and 30XX series of computers and DEC's VAX line of minicomputers. Modules available are:

EXHIBIT A

MARTIN MARIETTA DATA SYSTEMS NETWORK PROFILE

APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<ul style="list-style-type: none"> ● OPERATING ENVIRONMENT <ul style="list-style-type: none"> — IBM 4341, 30XX; VMS, MVS — CDC CYBER 170; NOS/BE ● PROGRAMMING LANGUAGES <ul style="list-style-type: none"> — APL — PL/1 — BASIC — RPG — COBOL — SNOBOL — FORTRAN — WATFIV ● DATA BASE MANAGEMENT SYSTEMS & TOOLS <ul style="list-style-type: none"> — ADABAS — INQUIRE — BTS II — LIBRARIAN — CICS — MARK IV/4260 — IDMS/CULPRIT — MODEL 204 — DATA DICTIONARY — PANVALET — DYL-260/280 — RAMIS II — EASYTRIEVE — SYSTEM 2000 — GIS/VS — TSO — IDMS/DC — WYLBUR — IMS DB/DC ● PRODUCTIVITY AND CONVERSION AIDS <ul style="list-style-type: none"> — BRIDGE — FSE — CA-OPTIMIZER — ISPF — CMS — QUICKJOB III — DUO ● BUSINESS PLANNING AND DECISION SUPPORT <ul style="list-style-type: none"> — EMBASSY TAX PLANNING — MAS-DECISION SUPPORT — MAS-M — MBA — PACII ● HUMAN RESOURCES <ul style="list-style-type: none"> — MAS-PAYROLL — MAS-PERSONNEL ● PROJECT PLANNING AND MANAGEMENT <ul style="list-style-type: none"> — MAS-PROJECT MANAGEMENT — MINIPERT — PACII — PMS IV — TRMS — TRMS:PS ● OFFICE AUTOMATION <ul style="list-style-type: none"> — PROFS — SCRIPT (IBM OR WATERLOO) 	<ul style="list-style-type: none"> ● MANUFACTURING AND INDUSTRIAL ENGINEERING <ul style="list-style-type: none"> — APT — MIDAS — DIACS II — MPC5 — HMS — MAS-MANUFACTURING ● CIVIL ENGINEERING <ul style="list-style-type: none"> — HEC1 — HEC2 — ICES ● ELECTRICAL ENGINEERING <ul style="list-style-type: none"> — ACAP — ASTAP — ELECTRICAL WIRING DATA SYSTEMS — MECA — SAMDA — ZTRAN ● MECHANICAL ENGINEERING <ul style="list-style-type: none"> — TRACE ● STRUCTURAL ENGINEERING <ul style="list-style-type: none"> — MSC/NASTRAN — STAAD III ● MATHEMATICS AND STATISTICAL ANALYSIS <ul style="list-style-type: none"> — BMDP — SAS/GRAPH — IMSL — SCSS — MPS III — SICON — MPSX370 — SPSS BATCH SYSTEM — SAS — TROLL — SAS/ETS ● SIMULATION AND MANAGEMENT SCIENCE <ul style="list-style-type: none"> — CSMPIII — GPSS V ● GRAPHICS AND PLOTTING <ul style="list-style-type: none"> — CALCOMP GRAPHICS — DISSPLA — SAS/GRAPH — TELL-A-GRAF — ULTRA PLOT ROUTINES — ZCHART ● LOGISTICS <ul style="list-style-type: none"> — OLSA

- General Ledger.
 - Accounts Receivable.
 - Accounts Payable.
 - Fixed Assets and Depreciation.
 - Purchase Order and Receiving.
 - Customer Order Processing.
 - Sales History.
 - Inventory Management.
- MAS-Personnel and Payroll consists of three fully integrated modules for human resource management. The products are available on IBM 30XX and 4300, HP 3000, and the DEC VAX line. Modules are:
- MAS-Payroll.
 - MAS-Personnel.
 - MAS-Benefits.
- MAS-Project Planning offers manufacturers an advanced management information system for program management. The system currently operates on IBM 30XX, 4300, and the DEC VAX series. Capabilities include network scheduling; multiple resource allocation, tracking, and projection; "what-if" analysis; sophisticated graphics; and flexible reporting formats.
- MAS-Decision Support is an interactive planning, modeling, and analysis tool that supports unstructured and semistructured decision making. It is available for IBM 370, 4300, and 30XX systems; HP 3000; and DEC VAX computers. The system consists of 25 applications including plotting and histograms, table and multidimensional arrays, Box Jenkins, statistical libraries, a hierarchical data manager, and Monte Carlo Risk.
- MAS-M, sold on a turnkey system basis or as a software product, is marketed to light manufacturers, wholesalers, and distributors. Divisions of large corporations or companies with less than \$50 million in revenue are primary candidates for MAS-M.
- Written in Basic-Plus-2, it is available on DEC PDP-11 and VAX machines running under VMS.
 - MAS-M is a fully integrated, on-line business system made up of 10 interactive elements covering inventory management, distribution control, and financial control. Individual application modules are:
 - Accounts receivable.
 - Accounts payable.
 - General ledger.
 - Order processing.
 - Invoicing.

MARTIN MARIETTA DATA SYSTEMS

- Inventory control.
 - Inventory accounting.
 - Bill of materials.
 - Materials requirements planning.
 - Purchasing.
- In 1982 and 1983, MMDS acquired several software products from different sources and combined them into a Hospital Information System (HIS). HIS is a total patient care system designed to provide a single source for all patient information through a number of integrated modules. Totally on-line, the system provides instant access to all patient information including demographic and historical data, order profile, test results, diagnoses, and procedures.
 - HIS is sold primarily as a software product for the IBM 4300 and 30XX series. MMDS has installed approximately six HIS systems, several of which are in federal government hospitals.
 - Modules of HIS are:
 - Registration/Admission/Discharge/Transfer (RADT).
 - Laboratory.
 - Radiology.
 - Pharmacy.
 - Nursing.
 - Dietary.
 - Physical Therapy.
 - DRG.
 - Physicians.
 - Outpatient Clinics.
 - Medical Records.
 - Ancillary Services.
- Software products marketed by Mathematica include both mainframe and microcomputer products for data base management, application development, and data communications. All software operates on IBM and IBM-compatible computers. On a calendarized basis, Mathematica's 1983 software revenue was \$24.9 million, a 28% increase over 1982 revenue of \$19.4 million. Foreign software sales were \$5 million in 1983 and \$3.4 million in 1982.
 - Mathematica's primary product is RAMIS II[®], a complete information processing system combining data base management and a fourth-generation language for application development. RAMIS is currently installed in over 1,200 sites worldwide, including over 20 service bureaus.
 - In 1983 Mathematica introduced RAMIS II English, one of two commercially available natural language products. English uses artificial intelligence technology to enable people to converse with a computer in ordinary English.

MARTIN MARIETTA DATA SYSTEMS

- In 1984 Mathematica introduced RAMIS II/PC bringing the full capabilities of mainframe RAMIS II to IBM PC XT/370 users. Mathematica also began marketing XT/370 computers as an IBM value-added distributor.
- ATLAS is the lead product of a family of data communications products marketed since 1982.
- A complete list of products marketed by Mathematica is presented in Exhibit B.
- During 1983 MMDS introduced the ITSoftware series for the IBM Personal Computer. The foundation for the product line is KeepIT, a relational data base management system. ITSoftware is sold through a combination of direct sales and distributors.
 - Products and prices of ITSoftware are:

• KeepIT (relational data base)	\$450
• CalcIT (spreadsheet)	400
• LinkIT (PC to mainframe)	150
• PassIT (3270 emulation)	250
• SortIT (DOS sort/merge)	125
• EditIT (editor)	150
• WritIT (word processing)	500
• ShowIT (graphics)	250
• MailIT (document transfer)	250
• StatIT (statistics)	500
• AskIT (front-end to KeepIT)	100
 - In the Fall of 1984 a new product, ShareIT, will be available for multiple users of data base management systems. It is a combination of hardware and software, which will bundle the data base machine with an enhanced version of KeepIT for multiple users of DBMS. Price of the product will be \$1,750 for a Cogent data base machine board plus the cost of the software, which varies according to the number of workstations supported: software for 2-3 workstations will be \$850; for 10 or more workstations the cost will be \$1,450.
- MMDS derived about \$34 million in U.S. revenue from professional services. About 53% came from commercial contracts and 47% came from federal government agencies.
 - MMDS professional services experience is in systems integration, instructional systems, local networking, and facilities management.
 - Recent contract awards include:
 - An eight-year contract valued at \$102 million with the U.S. Department of Labor to design, install, and maintain a com-

EXHIBIT B
MATHEMATICA'S SOFTWARE PRODUCTS

PRODUCTS	PRICE*	HARDWARE AND SYSTEM REQUIREMENTS
MAINFRAME SOFTWARE		
Basic RAMIS II System		
DBM (Data Base Manager), Reporter, Records Management, Executive, REF (External File Interface), Graph, IRM (Interactive Request Modification), Screen Manager, RAMHELP, RAMERROR, RAMSERVICE, Shared Memory Installation, One Communications Interface, One Operating System Interface	\$45,000-90,000	IBM 370, 30XX, 43XX, and compatible: DOS/VSE, OS/VS1, MVS, VM/CMS
Basic RAMIS II-RO (Reporting Only) System		
Same as Basic RAMIS II System but excluding DBM and Records Management	\$27,000-54,000	"
RAMIS II Optional Components		
RELATE	\$ 7,875-15,750	"
English Comprehension	\$13,500-27,000	
FSM (Formatted Screen Manager)	\$ 6,750-13,500	
Multiple Reports (84.2)	\$ 4,500- 9,000	
RAMLink (Personal Computer Link)	\$ 4,500- 9,000	
Automatic Data Base Interface (each)	\$ 3,375- 6,750	
PLOT (High Resolution Graphics)	\$ 6,625-11,250	
APL Interface	\$ 4,500- 9,000	
SAS Interface	\$ 1,125- 2,250	
RPI (Procedural Language Interface)	\$ 7,875-15,750	
RPI-CICS Interface	\$ 3,375- 6,750	
DFO (Financial Planning Option)	\$ 3,375- 6,750	
Usage Accounting	\$ 1,125- 2,250	
DBIS (Data Base Information System)	\$ 6,750-13,500	
READ DOS/OS	\$ 3,375- 6,750	
Additional Communications Interface	\$ 7,875-15,750	
Additional Operating System Interface	\$ 3,375- 6,750	
MARVEL	\$ 4,500- 9,000	
SGS (Screen Generator)	\$ 4,000- 8,000	
RAMLEARN Modules (Annual License Fee)		
Reporter	\$ 3,000- 7,000	"
REF	\$ 1,500- 3,500	
ATLAS Data Communications Systems and Related Components		
ATLAS For RAMIS II Usage Only	\$ 4,500- 9,000	IBM 370, 30XX, 43XX, and
ATLAS Full Usage	\$18,000-36,000	Compatible; DOS/VSE and
ATLAS-RPI Interface	\$ 3,000- 7,000	Other DOS-Based Operating
DES (Data Entry System)	\$ 8,000-12,000	Systems
TITAN	\$ 8,000-16,000	
PERSONAL COMPUTER SOFTWARE		
Basic RAMIS II/PC	\$ 1,395	
English Comprehension Release II	\$ 1,195	IBM PC XT/370
Relate	\$ 285	
RAMLEARN (Annual License Fee)	\$ 50	

* Mainframe prices are based on a 25-year license fee that varies, depending on CPU performance rating.

MARTIN MARIETTA DATA SYSTEMS

puterized information system for the Department's Division of Federal Employees' Compensation (DFEC).

- An \$8 million Department of Defense contract to provide data processing facilities management services to the Office of the Civilian Health and Medical Program of the Uniformed Services (OCHAMPUS).
- A subcontract with Martin Marietta Corporation to provide software validation and various technical support services for the air traffic control system upgrade project for the Federal Aviation Administration.
- With the acquisition of Mathematica, MMDS expanded its professional services to include the consulting and research capabilities of Mathtech, Inc. and the Policy Research Group. Calendarized revenue from these two operations amounted to \$14 million in 1983.
- Mathtech's areas of systems development and consulting expertise is in:
 - Energy and natural resources.
 - Telecommunications.
 - Manufacturing systems.
 - Environmental analysis.
 - Management and decision support.
 - Legal services and litigation.
 - Bio-medical information.
 - Defense and intelligence.
- The Policy Research group of MMDS provides analysis for a wide range of public policy issues primarily to the federal government, including employment, retirement and pensions, public assistance, and health. Although almost all of the consulting projects are noncomputer services activities, the organization does perform a small amount of computer systems analysis and design. Noncomputer services revenue from this organization is estimated at \$6 million in 1983, of which \$3 million was credited to MMDS upon completion of the acquisition.
- International revenue of \$43.5 million in 1983 came from Europe, England, Australia, Africa, and Middle and Far Eastern countries.
- The Hoskyns Group is one of the leading professional services companies in the United Kingdom. It specializes in systems integration and developing product applications in markets such as manufacturing, retailing, distribution, banking and finance, insurance, hotels, and government. In addition, Hoskyns is a world leader in computer-related education, having trained more than 27,000 students from 60 countries.

MARTIN MARIETTA DATA SYSTEMS

- Hoskyns markets MMDS's remote computing services and software products in Europe and several specialty products that are not available in the U.S. These are:
 - Mark II, a turnkey system for the hotel industry. The system is designed for hotels with 25 rooms and up. It offers front and back office applications including foreign currency exchange, point-of-sale guest charging, and telephone management.
 - The Kapiti International Banking System (KIBS) is a turnkey system for both retail and wholesale banking applications.
 - The Retail Business System is sold as a software product and turnkey system to retailers of all sizes. The product is customized to individual requirements and will support a number of applications from warehousing to financial control.

GEOGRAPHIC MARKETS

- Approximately 71% of MMDS's 1983 noncaptive revenue came from the U.S. and 29% was derived from international sources.
 - U.S. offices are in Atlanta, Boston, Chicago, Cleveland, Denver, Hartford, Houston, Los Angeles, New York, Philadelphia, Princeton, San Francisco, and Washington (DC).
 - International sales offices are in England and Europe. Other representatives market MMDS's products in Canada, Europe, Australia, Africa, South America, and in the Middle and Far East.

COMPUTER HARDWARE

- MMDS's data centers are located in Orlando (FL), Denver (CO), and London. The main data center in Orlando is one of the largest IBM installations in the U.S. Local dial-up or dedicated leased lines are available in all 50 U.S. states. International access is through Tymnet.
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 - IBM 4341s.
 - IBM 3033s.
 - IBM 3084s.
 - IBM 3081s.
 - Operating systems for the above include MVS/JES, VM/CMS, TSO, and CICS.

MARTIN MARIETTA DATA SYSTEMS

- Denver:
 - . CDC CYBER 170/730, NOS/BE.
 - . CDC CYBER 170/720, NOS.
- London:
 - . IBM 4341, VM/CMS.
 - . IBM 370, DOS/VSE.
 - . ICL 2950, DME.
 - . ICL 2903/4, Exec 3.
 - . ICL 1900, George 2T.
- Mathematica has an IBM 4341 installed in Princeton (NJ) for development of software products.

COMPANY HIGHLIGHT

MARTIN MARIETTA DATA SYSTEMS

6303 Ivy Lane
Greenbelt, MD 20770
(301) 982-6500

Richard J. Walters, President
Division Of Martin Marietta
Corporation
Total Employees: 3,500
Total Revenue, Fiscal Year
End 12/31/81: \$187,000,000
Noncaptive Revenue: \$99,164,000

THE COMPANY

- Martin Marietta Data Systems (MMDS) was formed in 1970 by its parent, Martin Marietta Corporation, to market data processing services to the manufacturing industry and to provide internal data support for the aerospace division. Since this time, MMDS has grown to a \$187 million division providing remote computing services, software products, professional services, and turnkey systems.
- MMDS's noncaptive revenue was \$99.2 million in 1981, a 53% increase over 1980 revenue of \$78.1 million. A five-year summary of captive and non-captive revenue follows:

MMDS FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1981	1980	1979	1978	1977
Total revenue	\$187,177	\$136,395	\$93,916	\$69,449	\$47,200
• Percent increase (decrease) from previous year	37%	48%	35%	47%	18%
Captive revenue	\$88,013	\$58,307	\$39,227	\$31,941	\$23,900
• Percent of total revenue	47%	43%	42%	46%	51%
Noncaptive (commercial) revenue	\$99,164	\$78,088	\$54,689	\$37,508	\$23,300
• Percent of total revenue	53%	57%	58%	54%	49%

- In March 1982 MMDS acquired the IBM based timesharing business of American Management Systems. Revenue of the operation was about \$5.6 million in 1981.

MARTIN MARIETTA DATA SYSTEMS

- MMDS is organized into two operations:
 - U.S. Operations markets and supports all MMDS products and services sold to government and commercial clients.
 - International Operations, based in London, markets and supports all MMDS services sold overseas.
- Approximately 2,500 MMDS employees are located in the U.S. and 1,000 are in international locations.
- Major competition for MMDS products and services comes from Boeing Computer Services, Comserv Corporation, Control Data Corporation, McDonnell Douglas Automation, and General Electric Information Services (GEISCO).

KEY PRODUCTS AND SERVICES

- MMDS's noncaptive revenue was derived as follows (\$ thousands):

	<u>1981</u>	<u>1980</u>	<u>1979</u>
U.S.			
Processing	\$35,617	\$25,699	\$17,492
Software	5,277	3,433	4,500
Professional	13,343	8,256	7,266
International	<u>44,927</u>	<u>40,700</u>	<u>25,431</u>
Total	\$99,164	\$78,088	\$54,689

- Revenue from U.S. based services was \$54.2 million in 1981, a healthy 45% increase over \$37.4 million in 1980. Gains are largely attributed to increased business from the federal government.
 - Largest increases were in professional services with a 62% gain.
 - Software products, recovering from a poor year in 1980, increased 54%.
 - Processing services, the largest component of MMDS's U.S. services, increased 39%.
- Reflecting Europe's economic conditions, international revenues increased only 10% between 1980 and 1981, down from a 60% growth level in the previous year.
- Through its remote computing service, MMDS provides a variety of manufacturing and general business application products on IBM and CDC mainframes.
 - Marketing emphasis is in manufacturing, government, petrochemical, and services industries, and in selling application solutions.

MARTIN MARIETTA DATA SYSTEMS

- MMDS's Modular Applications Systems (MAS) is a series of software packages that provide companies with materials management and accounting solutions. Some modules of MAS software have cross-industry applications and some are industry unique. MAS is sold as software products for in-house use, as turnkey systems, and is available on MMDS's network service.
- MAS, for the manufacturing industry, consists of six major modules with several submodules.
 - Master production scheduling.
 - Production planning.
 - Master scheduling.
 - Resource requirements planning.
 - Inventory control.
 - Materials requirements planning.
 - Inventory maintenance.
 - Inventory management.
 - Order management.
 - Inventory accounting.
 - Manufacturing control.
 - Order release.
 - Production scheduling.
 - Capacity requirements planning.
 - Shop floor control.
 - Input/Output reporting.
 - Performance reporting.
 - Purchasing.
 - Requisitions.
 - Printed purchase orders.
 - Critical material-tracking capability.
 - Cost control.
 - Cost standard.
 - Cost buildup capability.
 - Detailed inventory cost comparison.
 - Work-in-process valuation.
 - Production and purchase material variance reports.
 - Closed order analysis.
 - Engineering control.
 - Product structure entry and maintenance.
 - Routing data entry and maintenance.

MARTIN MARIETTA DATA SYSTEMS

- Process and tool information maintenance.
 - Where-used inquiries.
- MAS, with over 600 installations worldwide, is available on three types of hardware.
 - MAS II, offered in batch and on-line versions, runs on larger IBM mainframes in an IMS DB/DC environment. The on-line version was introduced in July 1982.
 - MAS-H, an on-line interactive system, operates on Hewlett-Packard 3000 computers.
 - MAS-E runs on IBM 4300s and operates in an on-line interactive mode. The MAS-E version is offered on the network service.
- MAS-M, sold on a turnkey system basis or as a software product, is marketed to light manufacturers, wholesalers, and distributors. Divisions of large corporations or companies with less than \$50 million in revenue are primary candidates for MAS-M. Product strengths of MAS-M are the financial applications.
 - Written in Basic-Plus-2, MAS-M is available on DEC PDP-11 and VAX machines, running under RSTS/E.
 - MAS-M is a fully integrated, on-line business system made up of 10 interactive elements covering inventory management, distribution control, and financial control.
 - Individual application modules include:
 - Accounts receivable.
 - Accounts payable.
 - General ledger.
 - Order processing.
 - Invoicing.
 - Inventory control.
 - Inventory accounting.
 - Bill of materials.
 - Materials requirements planning.
 - Purchasing.
- In addition to the MAS products, MMDS also sells the following software packages for in-house use on IBM equipment:
 - Online Logistic Support Analysis System (OLSA) for compliance with government Logistics Support Analysis Requirements (LSAR) specifications.

MARTIN MARIETTA DATA SYSTEMS

- Technical Requirements Management System (TRMS) provides timely and accurate information for effective management of large technical projects from proposal to delivery.
- Manufacturing Inventory and Acquisition System (MIDAS) consists of three subsystems for inventory control, order management, and accounts payable.
- MMDS derived about \$13.3 million in U.S. revenue from professional services. About \$8 million was from commercial contracts with the remainder coming from government sources.
 - MMDS professional services experience is in systems integration, instructional systems, local networking, and facilities management.
 - Clients include hospitals, petrochemical companies, manufacturers, and state and federal government agencies.
- International revenue of \$44.9 million in 1981 came from Europe, England, Australia, Africa, and Middle and Far Eastern countries. In addition to the products mentioned above, International Operations markets several specialty products which are not available in the U.S. These are:
 - MAS-V, a comprehensive vehicle management system for fleet operators, and a complete contract management and accounting system for vehicle contract hire and leasing companies. MAS-V is available on a service bureau basis and is also sold on DEC PDP-11 minicomputers.
 - MAS-R, a retail system sold on a minicomputer or offered through the service bureau.
 - Consulting services in banking, insurance, and brokerage industries.
 - Turnkey systems for hotels and insurance brokers.
- A profile of the applications offered on MMDS's network is listed in the exhibit.

GEOGRAPHIC MARKETS

- Approximately 55% of MMDS's noncaptive revenue is derived from the U.S. and 45% from international sales.
- MMDS maintains 13 U.S. sales offices in Atlanta, Chicago, Cleveland, Denver, Detroit, Houston, Los Angeles, New York, Orlando, Philadelphia, Pittsburgh, Washington, DC, and Winston-Salem.

COMPUTER HARDWARE AND SOFTWARE

- MMDS's data centers are located in Orlando (FL), Denver, Washington, DC, and London. MMDS provides nationwide access to its network service.
- Hardware maintained in these centers includes:
 - Orlando.
 - . 4 IBM 3033s
 - . 3 IBM 3081s.
 - . 1 IBM 4341.
 - Operating systems for the above include MVS/JES, VM/CMS, TSO, and CICS.
 - Denver.
 - . 1 CDC CYBER 170/730, NOS/BE.
 - . 1 CDC CYBER 170/720, NOS.
 - Washington, DC.
 - . 1 IBM 3033, MVS/JES/TSO/CICS.
 - . 1 IBM 370/168, VM/CMS.
 - London.
 - . 1 IBM 4341, VM/CMS.
 - . 1 IBM 370, DOS/VSE.
 - . 1 ICL 2950, DME.
 - . 1 ICL 2903/4, Exec. 3.
 - . 1 ICL 1900, George 2T.

EXHIBIT

MARTIN MARIETTA DATA SYSTEMS NETWORK PROFILE

APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<ul style="list-style-type: none"> ● OPERATING ENVIRONMENT <ul style="list-style-type: none"> – IBM 3081, MVS/JES2; VMS/CMS – CDC CYBER 170/730, 170/720, NOS, SCOPE ● PROGRAMMING LANGUAGES <ul style="list-style-type: none"> – IBM – CDC APL ALGOL BASIC APL COBOL BASIC FORTRAN COBOL PL/1 COMPASS RP6 FORTRAN SNOBOL PASCAL WATIV ● DATA MANAGEMENT SOFTWARE <ul style="list-style-type: none"> – CULPRIT – CICS – CICS – DATA DICTIONARY – IDMS – EASYTRIEVE – IMS – INQUIRE – MARK IV – TOTAL – RAMIS II – PANVALET – SYSTEM 2000 ● BUSINESS PLANNING <ul style="list-style-type: none"> – MBA – SAS/ETS ● PROJECT PLANNING/MANAGEMENT <ul style="list-style-type: none"> – CONCEPTS – MINIPERT – PAC II – PMS-MMDS – PMS IV – TRMS ● GRAPHICS <ul style="list-style-type: none"> – CALCOMP GRAPHICS – DISSPLA – SAS/GRAPH – TELL-A-GRAF – ZCHART 	<ul style="list-style-type: none"> ● MANUFACTURING <ul style="list-style-type: none"> – APT – DIACS (DOCUMENTATION) – MAP (ELECTRONIC PLANS) – MAS II – MCR (MFG. PARTS CONTROL) – MIDAS (INVENTORY) – MOTION – MPCS (PLANNING/CONTROL) – MPS (PERFORMANCE) ● MATHEMATICS/STATISTICAL <ul style="list-style-type: none"> – BMDP – IMSL LIBRARY – MPS IV – SAS – SCSS ● CIVIL ENGINEERING <ul style="list-style-type: none"> – HEC – ICES – RDS (ROADWAY DESIGN) ● ELECTRICAL ENGINEERING <ul style="list-style-type: none"> – ACAP – MECA – ASTAP – SAMDA – DLSP – ZTRAN ● MECHANICAL ENGINEERING <ul style="list-style-type: none"> – ALDLPIPE – BLAST – DOE-2.1 – MITAS II – SOLCOST – SOLCOST-PASSIVE – TRACE – TRASYS II ● STRUCTURAL ENGINEERING <ul style="list-style-type: none"> – ANSYS – MSC/NASTRAN ● LOGISTICS <ul style="list-style-type: none"> – OLSA – TPD



COMPANY HIGHLIGHT

MARTIN MARIETTA DATA SYSTEMS

6301 Ivy Lane
Greenbelt, MD 20770
(301) 345-0100

Richard J. Walters, President
Division Of Martin Marietta
Corporation
Total Employees: 2,100
Total Revenues, Fiscal Year End
12/31/79: \$93,916,000
Non-Captive Revenues:
\$54,689,000

THE COMPANY

- Martin Marietta Data Systems (MMDS) was formed in 1970 by its parent, Martin Marietta Corporation, to market data processing services to the manufacturing industry.
- Since that time, MMDS has grown to almost a \$94 million division providing a variety of remote computing services, software products and professional services. Forty-two percent of its total revenues are derived from captive sources within the corporation.
- A five-year summary of MMDS's captive and non-captive revenues follows:

MMDS
FIVE-YEAR FINANCIAL SUMMARY
(\$ Thousands)

ITEM \ FISCAL YEAR	1979	1978	1977	1976	1975
Total revenues	\$93,916	\$69,449	\$47,200	\$40,100	\$42,400
• Percent increase (decrease) from previous year	35%	47%	18%	(5%)	5%
Captive revenues	\$39,227	\$31,941	\$23,900	\$20,700	\$24,700
• Percent of total revenues	42%	46%	51%	52%	58%
Non-captive (commercial) revenues	\$54,689	\$37,508	\$23,300	\$19,400	\$17,700
• Percent of total revenues	58%	54%	49%	48%	42%

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- MMDS is organized into three groups to market and support its products and services. These are:

- Federal Systems Group: Markets contract and remote computing services to the federal government.
- Commercial Group: Provides all marketing, sales, consulting and product support services for both RCS services and software products to commercial clients.

Hoskyns Group Ltd.: A London-based, wholly owned subsidiary responsible for all European activities in support of MMDS products and services.

- In the fourth quarter of 1980, MMDS sold its joint-venture share (50%) of Financial Industry Systems (FIS) to Hartford National Bank and Trust Co. FIS offers facilities management and software packages to commercial banks, savings banks and insurance companies.
- MMDS still owns the Commercial Credit Union System, an automated credit union system developed by FIS.
- In 1979, MMDS's 2,100 personnel were segmented as follows:

- Computer services	1,225
- Operations	525
- Marketing	131
- Administration	132
- Other	87
	<hr/> 2,100
- MMDS's major competition for its products and services comes from Boeing Computer Services, Comserve Corporation, Control Data Corporation, McDonnell Douglas Automation, Software International and Artista Manufacturing Systems.

KEY PRODUCTS AND SERVICES

- MMDS's non-captive revenues were derived from the following sources:

	1979 Revenues (\$ Thousands)	Percent
Processing services	\$30,567	56%
Facilities management	1,412	3
Software products	3,062	5
Professional services	17,951	33
Other (including hardware)	1,697	3
	<hr/> \$54,689	<hr/> 100%

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- The MAS-80 Family (Modular Application System) is designed to support manufacturing applications. MMDS has installed over 1,200 systems since 1973. The components of the MAS Family are as follows:
 - MAS I, designed for use on MMDS's network service or on clients' computers. Available applications are included in Exhibit A.
 - MAS II, an upgrade of the original Manufacturing Control System, which is a totally integrated package available either on the network or to in-house users of IBM 370/158 or larger configurations. There are approximately 12 installations of the system, which sells for \$255,000. It is written in ANS COBOL and is DBMS-independent. Versions that support IMS, TOTAL and IDMS are available. MMDS can customize MAS II to meet specific client requirements. Application modules available are:
 - Costing.
 - Engineering control.
 - Inventory control.
 - Master scheduling.
 - Material requirements planning.
 - Production control.
 - MAS-H, sold as a standalone product or as a turnkey system using a Hewlett-Packard 3000 computer. The MAS-H software is priced at \$137,000, and there are approximately 25 installations. Average hardware cost for the HP 3000 with a 220M disk, one tape, a 400 LPM printer and eight CRT terminals is approximately \$130,000. Applications supported include:
 - Engineering control.
 - Financial control.
 - Inventory control.
 - Manufacturing control.
 - Master production scheduling.
 - Order processing.
 - Purchasing.
 - MAS-E, the newest member of the MAS-80 family, with the same functional characteristics as MAS-H, but operating in an on-line mode on IBM 370/30XX/4300 machines using CICS and DL/I. Both OS and DOS versions are available. Cost of the product ranges between \$79,000 and \$179,000. There are as yet no installations of this recent addition to the MAS-80 family.
- In early 1980, MMDS announced the introduction of a disaster recovery service called Rebound. Rather than attempting to backup an entire data center operation, Rebound begins with an evaluation to determine which of a company's computer systems are essential to the continuation of its business.

EXHIBIT A

MMDS
NETWORK PROFILE

APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<ul style="list-style-type: none"> • OPERATING ENVIRONMENT <ul style="list-style-type: none"> – IBM 303X, 370, MVS/JES2 – CDC CYBER 170/730, 170/750, NOS, SCOPR • PROGRAMMING LANGUAGES <ul style="list-style-type: none"> – APL – ASSEMBLY – VS BASIC – COBOL – FORTRAN – LQL – PL/I • DATA MANAGEMENT SOFTWARE <ul style="list-style-type: none"> – CICS – EASYTRIEVE – IDMS – IMS – SYSTEM 2000 – RAMIS II • PROGRAM DEVELOPMENT <ul style="list-style-type: none"> – WYLBUR – LIBRARY SERVICES (PANVALET, ADR LIBRARIAN) – MMDS/SCRIPT – TEXT MANAGEMENT (ATMS II) – OPTIMIZER III – TSO • CONTRACT/PROJECT MANAGEMENT <ul style="list-style-type: none"> – PROJECT MANAGEMENT (PMS-IV) – QUALITY ASSURANCE (QUADS) – COST PROPOSAL (MCPS) – PERSONNEL (MCPS) – TECHNICAL REQUIREMENTS (TRMS) – COST PLANNING (CONCEPTS) – PAC II • FINANCIAL MODELING <ul style="list-style-type: none"> – SIMPLAN – MBA 	<ul style="list-style-type: none"> • MANUFACTURING (MAS 80) <ul style="list-style-type: none"> – INVENTORY CONTROL – BUSINESS PLANNING – PRODUCTION CONTROL – FINANCIAL CONTROL – ENGINEERING CONTROL – MANUFACTURING PLANNING AND CONTROL • MATERIAL INVENTORY DATA AND ACQUISITION (MIDAS) <ul style="list-style-type: none"> – ORDER MANAGEMENT (OMS) – INVENTORY MANAGEMENT – ESTIMATING MANAGEMENT (EMS) • SCIENTIFIC AND ENGINEERING <ul style="list-style-type: none"> – STATISTICAL ANALYSIS (SAS, SPSS, BIOMED, ASTAP) – STRUCTURAL (NASTRAN) – SIMULATION (GPSS) – WIRING DATA (WDS) – AUTOMATIC CONTROL (ACAP) – TRANE A.C. ECON (TRACE) – IMSL LIBRARY – TRANSIENT RADIATION (TRAC) – IC SIMULATION (SPICE) – DIFFERENTIAL ANALYZER (SINDA) – ELECTRONIC CIRCUITS (ECAP) – SYSTEM MODELING (CSMP III) – TEXGAP – CAD-(SCI-CARDS) • GRAPHICS <ul style="list-style-type: none"> – CALCOMP GRAPHICS – DISPLA – TELLAGRAF • EDUCATION <ul style="list-style-type: none"> – INTERACTIVE INSTRUCTION (IIS)

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- The fee for critical systems backup is a minimum of \$1,500 per month. Usage charges for processing will be at the normal service rates.
- The Federal Systems Group of MMDS, headquartered in Greenbelt (MD), provides extensive system development work and network services to government clients. Agencies served include:
 - U.S. Department of Energy.
 - U.S. Department of Agriculture.
 - U.S. Department of the Air Force.
 - U.S. Department of the Army.
 - U.S. Civil Service Commission.
 - U.S. General Services Administration.
 - U.S. Department of Housing and Urban Development.
 - U.S. Department of the Interior.

GEOGRAPHIC MARKETS Approximately 80% of MMDS's revenues are derived from the U.S. and 20% from international sales, primarily to Europe. MMDS maintains offices in 16 cities.

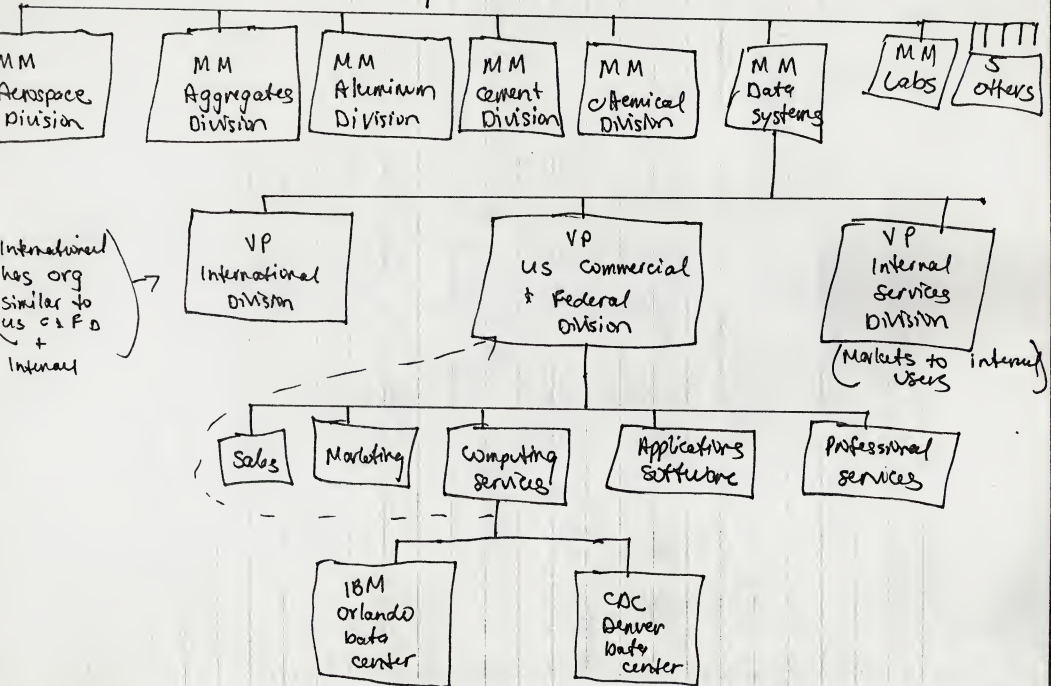
COMPUTER HARDWARE AND SOFTWARE

- MMDS's data centers are located in Orlando (FL) and Denver (CO). Access to the network is through the MMDS Communications Network, TYMNET and WATS lines.
- Hardware maintained in these centers includes:

- 4 IBM 3033s	MVS/JES2
- 1 IBM System/370 Model 168	MVS/JES2
- 2 IBM System/370 Model 158s	MVS/JES2
- 1 IBM System/370 Model 138	OS/VS1, HASP
- 2 IBM 4341s	VM/VS1
- 2 IBM 3042 Attached Processors	
- 1 Cyber 170 Series Model 730	NOS/BE
- 1 Cyber 170 Series Model 750	NOS



MARTIN MARIETTA CORP



① May be a few level between MMDS & president.

② Matrix management new this year.

③ Internal users not compelled to use MMDS.

④ Corporate handles all voice comm DC at MMDS (?)

⑤ Data centers have dotted line reporting to MMDS president.

~~Before~~ Before matrix management, had VP of Data centers

⑥ MMDS not of the size of divisions, is not a division, but on same level.

COMPANY HIGHLIGHT

MARTIN MARIETTA DATA SYSTEMS

300 East Joppa Road
Baltimore, MD 21204
(301) 321-5700

Richard J. Walters, President
Division Of Martin Marietta
Corporation
Total Employees: 1,800
Total Revenues, Fiscal Year End
12/31/78: \$69,449,000
Non-Captive Revenues:
\$37,508,000

THE COMPANY

- Martin Marietta Data Systems (MMDS) was formed in 1970 by its parent, Martin Marietta Corporation, to market data processing services to the manufacturing industry.
- Since that time, MMDS has grown to almost a \$70 million division providing a variety of remote computing services, software products, and professional services. Forty-six percent of its total revenues are derived from captive sources within the corporation.
- A five year financial summary of MMDS' captive and non-captive revenues follows:

MMDS
FIVE YEAR FINANCIAL SUMMARY
(\$ Thousands)

ITEM \ FISCAL YEAR	1978	1977	1976	1975	1974
Total Revenues	\$69,449	\$47,200	\$40,100	\$42,400	\$40,200
• Percent increase (loss) from previous year	47%	18%	(5%)	5%	NA
Captive Revenues	\$31,941	\$23,900	\$20,700	\$24,700	\$31,500
• Percent of total revenues	46%	51%	52%	58%	78%
Non-captive (commercial) revenues	\$37,508	\$23,300	\$19,400	\$17,700	\$ 8,700
• Percent of total revenues	54%	49%	48%	42%	22%

- MMDS is organized into three divisions to market and support its products and services. These are:

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- Federal Systems Division: Markets contract and remote computing services to the Federal Government.
 - Commercial Division: Provides all marketing, sales, consulting, and product support services for both RCS services and software products to commercial clients.
 - Haskyns Division: A London based, wholly owned subsidiary which is responsible for all European activities in support of MMDS products and services.
- In addition, MMDS owns 50% of Financial Industry Systems which offers facilities management and software packages to commercial banks, savings banks, and insurance companies.
 - In 1978, MMDS' 1,800 personnel were segmented as follows:

- Computer services	1,050
- Operations	450
- Marketing	112
- Administration	113
- Other	<u>75</u>
	1,800
 - MMDS' major competition for its products and services comes from Boeing Computer Services, Comserve Corporation, Control Data Corporation, McDonnell Douglas Automation, and Software International.

KEY PRODUCTS AND SERVICES

- MMDS' non-captive revenues were derived from the following sources:

	<u>1978 Revenues</u>	<u>Percent</u>
Processing Services	\$17,037	45%
Facilities Management	3,543	10
Software Products	3,017	8
Professional Services	12,795	34
Other (including hardware)	<u>1,116</u>	<u>3</u>
	\$37,508	100%

- The MAS-80 Family (Modular Application System) is designed to support manufacturing applications. MMDS has installed over 1,200 systems since 1973. The components of the MAS Family are:
 - MAS I is designed for use on MMDS' network service or on client computers. Applications available are included in Exhibit A. Network applications are cross industry.
 - MAS II, an upgrade of the original Manufacturing Control System, is a totally integrated package. Sold to in-house users, MAS II operates on

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

EXHIBIT A

MMDS

NETWORK PROFILE

APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<ul style="list-style-type: none"> • OPERATING ENVIRONMENT <ul style="list-style-type: none"> — IBM 303X, 370, MVS/JES2 — CDC CYBER 170, 6500, NOS/BE, SCOPR • PROGRAMMING LANGUAGES <ul style="list-style-type: none"> — APL — ASSEMBLY — VS BASIC — COBOL — FORTRAN — LQL • DATA MANAGEMENT SOFTWARE <ul style="list-style-type: none"> — CICS — EASYTRIEVE — IDMS — IMS — SYSTEM 2000 • PROGRAM DEVELOPMENT <ul style="list-style-type: none"> — WYLBUR — LIBRARY SERVICES (PANVALET, ADR LIBRARY) — MMDS/SCRIPT — TEXT MANAGEMENT (ATMS II) — OPTIMIZER III • CONTRACT/PROJECT MANAGEMENT <ul style="list-style-type: none"> — PROJECT MANAGEMENT (PMS-IV) — QUALITY ASSURANCE (QUADS) — COST PROPOSAL (MCPS) — PERSONNEL (MCPS) — TECHNICAL REQUIREMENTS (TRMS) — COST PLANNING (CONCEPTS) 	<ul style="list-style-type: none"> • MANUFACTURING (MAS 80) <ul style="list-style-type: none"> — INVENTORY CONTROL — BUSINESS PLANNING — PRODUCTION CONTROL — FINANCIAL CONTROL — ENGINEERING CONTROL — DISTRIBUTION ORDER ENTRY — MANUFACTURING PLANNING AND CONTROL • MATERIAL INVENTORY DATA AND ACQUISITION (MIDAS) <ul style="list-style-type: none"> — ORDER MANAGEMENT (OMS) — INVENTORY MANAGEMENT (IMS) — ESTIMATING MANAGEMENT (EMS) • SCIENTIFIC AND ENGINEERING <ul style="list-style-type: none"> — STATISTICAL ANALYSIS (SAS, SPSS, BIOMED, ASTAP) — STRUCTURAL (NASTRAN) — SIMULATION (GPSS) — WIRING DATA (WDS) — AUTOMATIC CONTROL (ACAP) — TRANE A.C. ECON (TRACE) — IMSL LIBRARY — TRANSIENT RADIATION (TRAC) — IC SIMULATION (SPICE) — DIFFERENTIAL ANALYZER (SINDA) — ELECTRONIC CIRCUITS (ECAP) — SYSTEM MODELING (CSMP III) — TEXGAP — CAD-(SCI-CARDS) — CALCOMP GRAPHICS • EDUCATION <ul style="list-style-type: none"> — INTERACTIVE INSTRUCTION (IIS)

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

IBM 370/158 or larger configurations. MAS II is written in ANS COBOL and is DBMS independent. Versions which support IMS, TOTAL, and IDMS are available. MMDS can customize MAS II to meet specific client requirements. Application modules available are:

- . Costing.
- . Engineering Control.
- . Inventory Control.
- . Master Scheduling.
- . Material Requirements Planning.
- . Production Control.
- MAS-H, a recently announced product, will be sold as a turnkey system using a Hewlett-Packard 3000 computer. The MAS-H software is priced at \$137,000. Average hardware cost for the HP 3000 with a 220M disk, one tape, a 400 LPM printer, and eight CRT terminals will run approximately \$130,000. Applications supported will be:
 - . Engineering Control.
 - . Financial Control.
 - . Inventory Control.
 - . Manufacturing Control.
 - . Master Production Scheduling.
 - . Order Processing.
 - . Purchasing.
- The Federal Systems Division of MMDS is headquartered in Bethesda, MD. Extensive work is performed in the federal sector, including contracts under the following federal agencies:
 - U.S. Department of Energy.
 - U.S. Department of Agriculture.
 - U. S. Department of the Air Force.
 - U.S. Department of the Army.
 - U.S. Civil Service Commission.
 - U.S. General Services Administration.
 - U.S. Department of Housing and Urban Development.
 - U.S. Department of the Interior.

GEOGRAPHIC MARKETS Approximately 80% of MMDS' revenues are derived from the U.S. and 20% from international sales, primarily European. MMDS maintains offices in 21 cities.

COMPUTER HARDWARE AND SOFTWARE

- MMDS uses three networks for supplying national communications to its clients. These, centered in the Orlando and Denver computer facilities, are the MMDS Communications Network, Tymnet network, and public WATS network.

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- Hardware maintained in these centers includes:

- | | | |
|---|------------------------------|--------------|
| - | 3 IBM Model 3033s | MVS/JES2 |
| - | 1 IBM System/370 Model 168 | MVS/JES2 |
| - | 2 IBM System/370 Model 158s | MVS/JES2 |
| - | 1 IBM System/370 Model 138 | OS/VS1, HASP |
| - | 1 Cyber 170 Series Model 172 | NOS/BE |
| - | 1 CDC 6500 | SCOPE |



INPUT CONTACT REPORT

COMPANY: <u>Martin - Marietta Data Systems</u>	Date: <u>6/2/80</u>	REASON FOR CONTACT	RELATING TO
NAME: <u>Art Walters</u>	INPUT STAFF	<input type="checkbox"/> SALES	<input type="checkbox"/> MAS <input type="checkbox"/> SES
TITLE:	<u>WMS</u>	<input type="checkbox"/> INTERVIEW	<input type="checkbox"/> CAMP <input type="checkbox"/> USER
ADDRESS:	INIT.	<input checked="" type="checkbox"/> PRESENTATION	<input type="checkbox"/> FSP
	INIT.	<input type="checkbox"/> SUPPORT	<input type="checkbox"/> CUSTOM
	<input type="checkbox"/> PHONE	<input type="checkbox"/> OTHER	ID
PHONE () -	<input checked="" type="checkbox"/> VISIT		<input checked="" type="checkbox"/> OTHER
			ID

DISCUSSION: MMDS is now a \$100M Company in commercial computer services

BUSINESS DEVELOPMENT POTENTIAL: _____

☐ EXTRA PAGE(S) ATTACHED

ACTION DIST	DESCRIBE ACTION OR FOLLOW-UP	BY WHEN	DONE	INFO DIST
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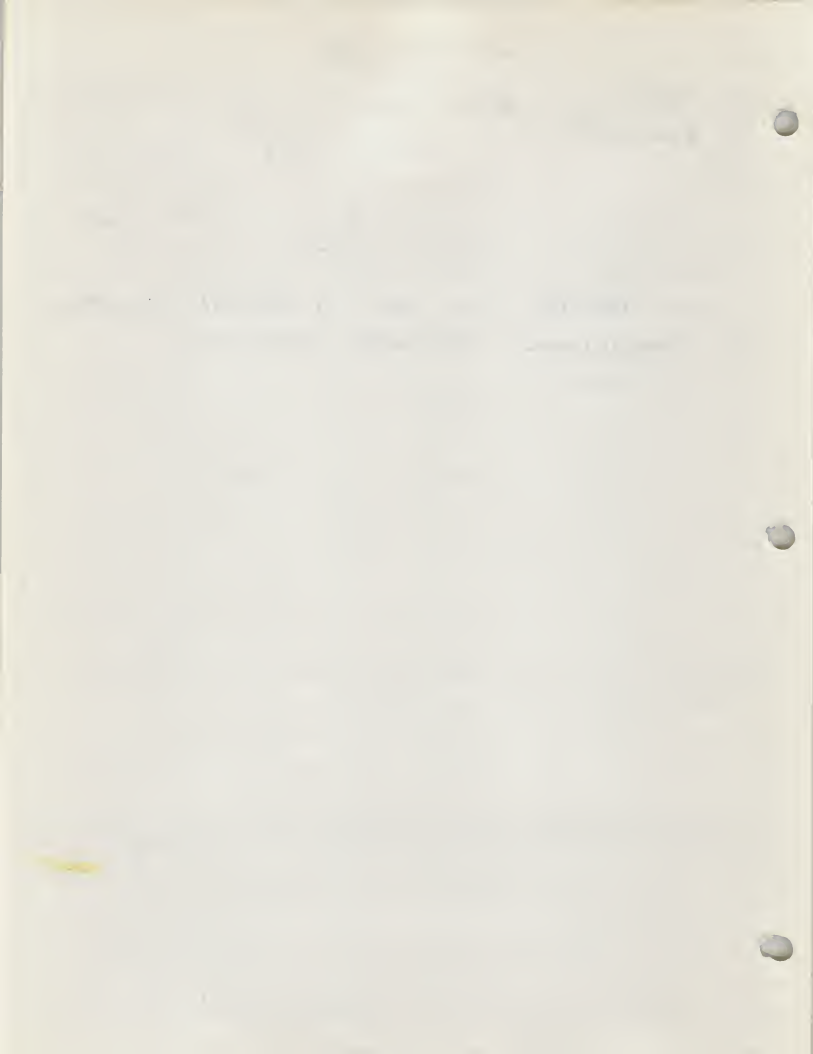
WHITE • DIST

GREEN • MARKETING
OR PROJECT

YELLOW • CONTACT

PINK • EXEC

GOLDEN ROD • ORIGINATOR



23 April 1980

Martin Marietta Data systems

Richard Walters	President
Robert V. Windley	VP Federal systems Division
Larry McTavish	VP commercial Division
Ray Harsant	VP Hoskyns Division
William Snowden	VP Finance
Ross Macaulay	VP Legal and contracts
C. William Spangler	VP Human Resources
Shirley Proutch	VP Martin Marietta Accounts
Richard Swartz	Director Marketing

Financial Industry systems (50% ownership)

Michael King - General Manager

→ All European operations & marketing through the Hoskyns Division in London



COMPANY HIGHLIGHT

MARTIN MARIETTA DATA SYSTEMS

300 East Joppa Road
Baltimore, MD 21204
(301) 321-5700

Barry D. Rowe, President
Division of Martin Marietta Corp.
Total employees: 1,800
Computer services sales, fiscal year
end 12/31/77: \$55,000,000

THE COMPANY

- Martin Marietta Data Systems (MMDS) was formed in 1970 by Martin Marietta Corporation to sell data processing services primarily to the manufacturing industry.
 - In 1973, Financial Industry Systems (Hartford, CT) was formed. It is a general partnership between Martin Marietta Corp. and Hartford Financial Systems, Inc. (a subsidiary of the Hartford National Bank and Trust Co.). Financial Industry Systems (see CAMP Company Highlight) offers facilities management and software packages to commercial banks, savings banks, and insurance companies.
 - In 1975, Martin Marietta Corporation acquired Hoskyns Group Ltd., an English computer software firm, to add expertise to MMDS.
 - MMDS currently offers remote computing services (both remote batch and interactive) as well as proprietary application software products for implementation on clients' computers.
- MMDS revenues have grown an average 13% annually since 1975 from \$43 million to \$55 million. In the same period, its parent had net sales increases of approximately 17% annually from \$1,053.366 million to \$1,439.761 million; net earnings grew 36% annually, from \$55.367 million to \$102.110 million.
- The 1,800 employees are divided as follows:

- Computer services	1,050
- Operations	450
- Marketing	112
- Administration	113
- Other	75
	1,800

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

KEY PRODUCTS AND SERVICES

- Sixty percent of MMDS's annual revenues are derived from worldwide commercial sales. The remaining 40% are generated by its parent corporation and divisions.
- Of the U.S. commercial sales (approximately 83% of total non-captive revenues), nearly 40% are derived from remote computing services, 20% from facilities management, and 40% from software products and professional services.
- The MAS-80 Family (Modular Applications Systems), with over 900 systems installed, is MMDS's major software product line. Designed for in-house use on IBM systems, MAS business systems are also made available to users of MMDS remote computing services and network. The modular MAS-80 Family consists of six main business systems. These systems (desired modules only) can be implemented on maxi- or minicomputers with substantial flexibility between batch, on-line, and data base features.
- SDM (Systems Development Methodology), a non-computerized management tool, is a methodology for managing projects and developing systems. It is the standard which MMDS uses for controlling turnkey projects and implementing MAS based systems, and is also available as a proprietary product. It currently has approximately 40 installations.
- Professional services, generating approximately 5% of MMDS U.S. revenues, provide custom system development as well as turnkey installations. MMDS employs a proprietary system architecture when designing and implementing minicomputer-based systems. It also utilizes SDM. The majority of MMDS contract programming is applications oriented.

APPLICATIONS

- MMDS provides primarily general business applications. Those available through MAS include financial control, inventory control, business planning, production control, engineering control, and distribution order entry.
- Financial control
 - General ledger
 - Accounts receivable
 - Accounts payable
 - Payroll

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- Inventory control
 - Material requirements planning
 - Inventory accounting
 - Order control
 - Policy control
 - Purchasing
- Business planning
 - Forecasting
 - Master production scheduling
 - Capacity requirements planning
- Production control
 - Production scheduling
 - Shop floor reporting
 - Costing
- Engineering control
 - Engineering change control
 - Bill of material
 - Cost generation
- Distribution order entry
 - Order entry
 - Distribution requirements planning
 - Invoicing

INDUSTRY MARKETS Discrete manufacturing provides a substantial portion of MMDS' commercial revenues, followed by the financial industry, wholesale distributors, services firms, and federal, state, and local government agencies. Its parent company, a manufacturer of aluminum, chemicals, cement, and aerospace products is the largest single customer, accounting for 40% of worldwide sales.

GEOGRAPHIC MARKETS

- MMDS' annual revenues are increasingly evenly distributed throughout the U.S. Previously, their concentration was in the Eastern and Central/Midwestern states. International sales, principally European, generate approximately 17% of total revenues.

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- Sales and branch offices are located in:

- Towson, MD
- Orlando, FL
- Cleveland, OH
- Denver, CO
- Philadelphia, PA
- Los Angeles and Irvine, CA
- Chicago, IL
- New York, NY
- Pittsburgh, PA
- Houston, TX
- Washington, D.C.
- Hartford, CT
- Winston-Salem, NC
- London, England

COMPUTER HARDWARE AND SOFTWARE

- MMDS uses the following hardware in providing its services:

- | | |
|--------------------------------|--------------|
| - 2 IBM Model 3033s | MVS/JES2 |
| - 1 IBM System/370 Model 168 | MVS/JES2 |
| - 2 IBM System/370 Model 158s | MVS/JES2 |
| - 1 IBM System/370 Model 138 | OS/VS1, HASP |
| - 1 Cyber 170 Series Model 172 | NOS/BE |
| - 1 CDC 6500 | SCOPE |

- Available software includes IMS, System 2000, IDMS, WYLBUR, CIS, DBOMP, TSO, and MMDS products such as MAS. Languages include COBOL, FORTRAN PL/I, APL, BASIC, RPG, and ASSEMBLER.
- MMDS continuously evaluates IBM and other vendor state of the art hardware and software for implementation in its system.

Deck Memerson

COMPANY HIGHLIGHT

MARTIN MARIETTA DATA SYSTEMS
300 East Joppa Road
Baltimore, MD 21204
(301) 321-5700

Barry D. Rowe, President
Division of Martin Marietta Corp
Total employees: 1200
Computer Services sales, fiscal
year end 12/31/76: \$45,000,000

THE COMPANY

- Martin Marietta Data Systems (MMDS) was formed in 1970 by Martin Marietta Corporation to sell data processing and resource management services to the manufacturing industry.
 - In 1973, MMDS formed a joint venture with Financial Industry Systems (a subsidiary of the Hartford National Bank and Trust Co) to extend these services to banks, insurance companies, and the financial industry.
 - In 1975, the parent corporation acquired Hoskyns Group Ltd., an English computer software firm, to add expertise to MMDS.
 - MMDS currently offers remote batch processing as well as professional services and software products. Local batch processing is also available.
- MMDS revenues have grown 5% since 1975 from \$43 million to \$45 million. In the same period, its parent had revenue increases of 16%, from \$1.066 billion to \$1.232 billion; net earnings grew 42%, from \$55.367 million to \$78.503 million.
- The 1200 employees are divided as follows:

- computer services	700
- operations	300
- marketing	75
- administration	75
- other	50
	<hr/>
	1200

KEY PRODUCTS AND SERVICES

- Fifty-five percent of MMDS's annual revenues are derived from worldwide commercial sales. The remaining 45% are generated by its parent corporation and divisions.

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- Of the U.S. commercial sales, nearly 40% are derived from remote computing services, 35% from facilities management, and 25% from software products and professional services.
- MAS (Modular Applications Systems) with over 600 systems installed is MMDS's major software product. Designed for in-house use on IBM systems it is also made available free of charge to users of MMDS remote computing services and network. MAS consists of six main business oriented systems, 110 jobs (system modules), 225 programs, and 4250 submodules.
- Professional services, generating approximately 12% of MMDS U.S. revenues, provide custom systems development as well as turnkey installations. MMDS employs a proprietary system architecture when designing and implementing minicomputer-based systems. It also utilizes SDM. The majority of MMDS contract programming is applications oriented
- SDM (Systems Development Methodology), a noncomputerized management tool, is a methodology for managing projects and developing systems. It is the standard which MMDS uses for controlling turnkey projects and implementing MAS based systems, and is also available as a proprietary product. It currently has approximately 40 installations.

APPLICATIONS MMDS provides primarily general business applications. Those available through MAS include:

- | | |
|---|---|
| • Financial control <ul style="list-style-type: none">- General accounting- Financial accounting- Inventory accounting- Plant accounting- Payroll | • Manufacturing control <ul style="list-style-type: none">- Production scheduling- Production expediting- Performance reporting |
| • Inventory control <ul style="list-style-type: none">- Material requirements planning- Inventory management- Inventory recording | • Cost control <ul style="list-style-type: none">- Job batch costing- Standard costing- Standard cost generation |
| • Business planning <ul style="list-style-type: none">- Resource planning- Forecasting- Budgeting | • Order control <ul style="list-style-type: none">- Customer order processing- Invoicing- Purchase order processing |
| | • Foundry control |
| | • Engineering design and control |

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

INDUSTRY MARKETS Discrete manufacturers provide more than three-fourths of MMDS commercial revenues, followed by the financial industry, wholesale distributors, services firms, and federal, state and local government agencies. Its parent company, a manufacturer of aluminum, chemicals, cement, and aerospace products is the largest single customer, accounting for 45% of worldwide sales.

GEOGRAPHIC MARKETS:

- Approximately 50% of MMDS annual revenues are derived from the central midwestern U.S. Remaining revenues are unevenly distributed throughout the U.S. with a concentration in the Western and Pacific states. International sales, principally European, generate approximately 17% of total revenues.
- Sales and branch offices are located in Towson, MD; Orlando, FL; Rocky River, OH; Englewood, CO; Philadelphia, PA; Torrance, CA; Des Plaines, IL; New York, NY; and London, England.

COMPUTER HARDWARE AND SOFTWARE

- MMDS uses the following hardware in providing its services:

2	IBM 370/168s	MVS/JES2
2	IBM 370/158s	MVS/JES2
1	IBM 370/148	VSI
1	IBM 370/135	OS/MFT, HASP
1	CDC 6500	SCOPE
- Available software includes IMS, CIS, DBOMP, TSO, and MMDS products such as MAS. Languages include COBOL, FORTRAN, PL/1, SNOBOL, RPG, and Assembler.
- MMDS continuously evaluates IBM and other vendor state of the art hardware and software for implementation in its system.

COMPANY HIGHLIGHT

MARTIN MARIETTA DATA SYSTEMS
300 East Joppa Road
Baltimore, Maryland 21204
(301) 823-1600

Barry D. Rowe, President
Division of Martin Marietta Corp.
Total Company Sales as of FY ending
12/75: (MMC) \$1,053,366,000
Computer services sales 12/75:
\$43,000,000 E

NUMBER OF EMPLOYEES engaged in computer services: 1200 (800 in U.S.)

KEY PRODUCTS/SERVICES: MMDS markets mostly facilities management and remote computing (remote job entry), software products and professional services. Professional services performed are mainly in data base management, turn key systems and minicomputers. Facilities management represents nearly half of revenues and remote computing over one-third. Facilities management contracts are negotiated rather than marketed as a product. Half the business is captive since it is purchased by the parent company. Key products offered include:

MAS, Modular Application Systems: It is the major product marketed by MMDS. It can be purchased as a software product for in-house use on an IBM system. It is also made available free of charge to users of MMDS RJE terminals and network. MAS consists of six main modules which are business oriented: They are discussed under applications. In addition, MAS consists of 1634 programs and 4250 submodules. Over 500 600 installations have been implemented.

SDM, Systems Development Methodology: consists of data management software and the following specific packages:

Testmaster, which is a modular programming test harness.

- Tablemaster, which is for decision table processing.

- HSL1, a systems analysis language.

Over 100 of these "Master Series" are in use.

APPLICATIONS: SDM is systems oriented. Applications available through MAS include:

- Financial control
 - General accounting
 - Financial accounting
 - Inventory accounting
 - Plant accounting
 - Payroll
- Inventory control
 - Material requirements planning
 - Inventory management
 - Inventory recording

March/1976

They will
do facilities
management

4590

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See Insert
(A)

system

via a methodology for

managing projects & developing systems. It is available as a proprietary product. But more importantly, when the standard is used by MMDS for controlling turnkey projects & implementing MAS based system

COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

- Manufacturing control
 - Production scheduling
 - Production expending
 - Performance reporting
- Cost control
 - Job batch costing
 - Standard costing
 - Standard cost generation
- Business planning
 - Resource planning
 - Forecasting
 - Budgeting
- Order control
 - Customer order processing
 - Invoicing
 - Purchase order processing

- Engineering Design + Control
- Foundry Control

INDUSTRY MARKETS: MMDS serves primarily the manufacturing and banking industries and some distribution firms. The parent company, a manufacturer of aluminum, chemicals, cement, and aerospace products, is ~~by far~~ the largest customer. MMDS also has a joint venture with Hartford National Bank and Trust.

GEOGRAPHIC MARKETS: Customers are concentrated in the Northeastern region of the U.S. and also tend to cluster around the MMDS data centers located in Baltimore, Buffalo, Orlando, Dallas, Chicago, Denver and Los Angeles. Users outside the U.S., primarily in Europe, account for 20% of sales. In addition to the headquarters office in Baltimore, locations of sales and branch offices are as follows:

300 East Joppa Rd.
Towson, Md 21285
301-321-5722

Great Lakes Data Center
P.O. Box 247
Buffalo, New York 14221
(716) 634-8210

19200 South Western Avenue
Torrance, California 90509
(213) 328-0660

P.O. Box 5837 MP 169
Orlando, Florida 32085
(305) 855-1050

2200 East Devon Avenue Suite 193
Des Plaines, Illinois 60018
(312) 298-1247

20575 Center Ridge Road
Rocky River, Ohio 44116
(216) 331-7755

Hoskyns, Inc./MMDS
75 Rockefeller Plaza
New York, New York 21204
(212) 541-4710

400 Continental National Bank Bldg.
Englewood, Colorado 80110
(303) 761-3781

Hoskyns Group Limited (Hoskyns Int'l)
91-93 Farringdon Road
London, EC1M 3LB England
242-1951

2000 Markat St.
Phila Pa 19103
(215) 963-0225

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COMPANY HIGHLIGHT/MARTIN MARIETTA DATA SYSTEMS

COMPUTER HARDWARE AND SOFTWARE:

2	IBM 370/168s	SYS, HASP
2	IBM 370/158s	MVS/JES2
1	IBM 370/145 148	OS/MVT VSI
1	IBM 370/135	OS/MFT, HASP
1	IBM 360/50	OS/MFT, HASP
1	CDC 6500	SCOPE

Additional software available includes: IMS, TSO, DOS, DBOMP, TOTAL


OVERALL ASSESSMENT AND TRENDS: Martin Marietta made a big investment in data processing systems starting in the mid to late 1960's and ~~now is striving for some return on that investment.~~ In the early 1970s MMDS placed emphasis on obtaining facilities management contracts, particularly with banks and manufacturing firms. More recently emphasis has been placed upon remote computing (RJE) and software markets. The acquisition of Hoskyns Limited provided a vehicle for expansion into European markets. By continuing to pursue the RJE and software markets MMDS should increase annual sales by 25% to 30% per annum.

INSERT
(A)

- Professional Services: custom systems development for both main & mini computers, as well as turnkey work, comprise fully 20% of MMDS' efforts. In addition to utilizing the SDC in these efforts, MMDS employs a proprietary "Systems Architecture" when designing & implementing mini computer based systems.

COMPANY HIGHLIGHT

MARYLAND NATIONAL OPTIMATION
SERVICES, INC.
11428 Rockville Pike
Rockville, MD 20852
(301) 770-6930


Daniel F. Wallingsford,
President
Wholly owned subsidiary of
Maryland National Corp., a
one bank holding company
Total employees: 110
Total revenues, fiscal year
end 12/31/76: \$2.4 million

COMPANY BACKGROUND

- Maryland National Optimation Services, Inc. (MANOSI) was founded in 1969 as a public corporation by the Maryland National Corporation (a one bank holding company of Maryland National Bank). It was subsequently acquired by the founder and is now a wholly owned subsidiary.
- MANOSI provides computer to output microfilm (COM), scanning, data conversion, source filming, and batch processing services to approximately 150 clients primarily in the banking, retail, and service industries. Originally it performed only scanning for the Maryland National Bank. Diversification began in 1970 with the addition of COM services now generating 60% of total revenues.

OVERALL ASSESSMENT

- MANOSI considers that the combinations of scanning and COM, and scanning to mag tape enable it to perform data conversion and data entry more rapidly and accurately than through keypunching.
- The company has grown from revenues of \$100,000 in 1971 to projected revenues of \$2.8 million in 1977. Profits appeared in 1974 and have continually increased since then.
- Major competition is from American Management Systems, Datatel, Executive Systems, Aztech, Control Data, and Service Bureau Company.
- In 1976 MANOSI consolidated operations in a new facility (twice the size of the old building), leased an IBM 360/30 (previously it shared a computer with Executive Systems Corporation), and brought source document filming in-house.

COMPANY HIGHLIGHT/MARYLAND NATIONAL OPTIMATION SERVICES, INC.

- In 1977 MANOSI will upgrade to at least an IBM 370/145, add remote job entry capability, begin offering industry-specialized minicomputer-based turnkey systems, and increase its library of applications software packages.
- MANOSI management considers that a major drawback to increasing market share is that its sales staff lacks expertise in and knowledge of MANOSI's diverse services. Adding two to the current three sales people in 1977 is not expected to resolve this marketing problem in the near term.

KEY PRODUCTS AND SERVICES

- Forty percent of MANOSI revenues is generated by COM services. Another 30% is derived from data conversion, including key to disk, optical character reader, scanning to tape; 20% from batch processing including keypunching; 5% from source filming; and 5% from scanning as a stand alone service.
 - MANOSI claims a 60% market share in COM services in the Maryland/Washington, D.C. area.
 - Turnkey systems will be offered in 1977.
 - Retail inventory control, membership, and union dues collection applications software packages are being developed by MANOSI for use in its service bureau and turnkey systems.
- MANOSI expects data processing to replace COM as the major revenue source within a few years.
- MANOSI's approximately 150 users include National Geographic, the National Association of Securities Dealers, American Trucking Association, Black and Decker, Hecht, Montgomery Ward, Xerox, Montgomery County, West Virginia Telephone, Control Data, Export-Import Bank, Koppers, Marriott, NASA, and the National Wildlife Association.

APPLICATIONS MANOSI provides only general business applications. They include association list maintenance and fund raising applications.

COMPANY HIGHLIGHT/MARYLAND NATIONAL OPTIMATION SERVICES, INC.

INDUSTRY MARKETS In 1976, 75% of MANOSI revenues was generated by financial institutions, retail distributors, and membership associations; the remaining 25% came from state and local government agencies, hospitals, utilities, trade unions, and other service bureaus. By year end 1977 85% of revenues will be generated by financial institutions, retail associations, and trade unions.

GEOGRAPHIC MARKETS

- More than 95% of MANOSI revenues is currently generated by companies in the Washington, D.C./Baltimore area with the remainder distributed throughout the U.S.
- New users will come from the Southeast. MANOSI is considering branch offices in Miami, Atlanta, and Richmond.

COMPUTER HARDWARE AND SOFTWARE

- MANOSI currently leases an IBM 360/30 computer, using DOS, which will be upgraded to a larger system in late 1977. It has approximately six minicomputers, two DEC/PDP/8 and PDP/11 for key to disk data conversion, one Segma minicomputer for scanning, and three minicomputers for controlling the COM equipment.
- The company also has three 2314-equivalent disk drives, five 7 and 9 track tape drives, and one IBM 1403 line printer.
- MANOSI will consider supplying on-site remote data entry terminals to its clients.

Vendor Profile

A Publication from INPUT's Vendor Analysis Program

May 1998

Mastech Systems Corporation- Baan Services Providers

Contact Information for Baan Services in North America

Mark Love

E-mail: markl@mastech.com

Mastech

1004 McKee Road
Oakdale, PA 15071
USA

Phone: 800-311-1970, ext. 6102

Fax: 412-494-9272

Internet: www.mastech.com

The following profile outlines the services and support offered by Mastech Systems Corporation for Baan Services.

Company Background

Founded in 1986, Mastech today employs nearly 2,900 professionals worldwide. Mastech has offices in the United States, Canada, the United Kingdom, India, Singapore, Japan, the Middle East, and Australia, and more than 360 clients worldwide. Mastech's worldwide revenues totaled nearly \$104 million in 1995, growing to \$123 million in 1996 and \$196 million in 1997. North American revenues were \$103 million, \$117 million and \$179 million for the same periods.

Mastech's main activities include:

- ERP Package Implementation Services
- Client/Server/Migration Services
- Conversion/Migration

- Year 2000
- Application Maintenance Outsourcing
- Internet/Intranet
- Software Training

Mastech is a publicly owned company.

Baan Activities

Mastech provides Baan Application Solutions to Fortune 1000 companies, large system integrators, and software/hardware vendors around the world. Their software professionals, all with experience and Mastech training in Baan, have expertise in a wide variety of vertical markets, and they are located where their clients are—anywhere in the world. Mastech helps clients maximize the return on their Baan investment. With Mastech, a Baan project is delivered on time and within budget no matter which of their broad range of services is selected. Mastech's Baan professionals will meet a client's enterprise needs with:

- Time and materials consulting
- Offsite software development
- Education and training services

A Sampling of Mastech's Baan Services includes:

- Project Scope
- Definitions
- Project Planning
- Project Management
- Strategy Development
- Upgrades
- Configuration
- Interfacing

- Implementation
- Training

Mastech entered the North American Baan services market in 1996.

Employees

Exhibit 1 identifies six primary Baan skill categories, and notes Mastech's estimated growth in staff in these areas over the next twelve months.

Exhibit 1

Mastech Baan Staffing

Type of Staff	Current Number	Growth % 12 Months
Business Consultants	—	—
Project Directors	1	200%
Project Managers	3	200%
Application Consultants	19	350%
Technical Consultants	6	100%
Post-implementation Support Personnel	1	100%
Other	—	—
Total	30	285%

Source: Mastech

Worldwide, Mastech has more than 2,900 employees, of which 30 (all located in North America) are dedicated to their Baan practice. In North America, there are more than 1,900 employees.

Implementation Approaches

Mastech uses BAAN Target Enterprise for its implementation methodology, to ensure both quality and effective "Time to Benefit" solutions. Mastech implementation approaches include:

Evaluation

Mastech software engineers draw upon extensive industry experience and Baan expertise to design the best configuration for each business they serve. Their recommendations protect against the obsolescence of a client's critical systems by forecasting for future growth.

Assessment

Mastech's assessment process evaluates when their clients are ready to initiate their Baan implementations. They determine client strengths and weaknesses, and improve their chances of success.

Project Management

Mastech either can provide a client with software engineers with specific industry and Baan module expertise, or mobilize a team to take full responsibility for project management. This methodology has been used successfully in projects ranging from in size from \$50,000 to \$25 million.

Training

Mastech offers a wide variety of training programs, on-site or in their own facilities, all specifically designed to meet client needs.

Ongoing Support Offerings

In addition, Mastech provides a broad range of flexible solutions for post-implementation support including both on-site and off-site solutions.

Pricing Approaches

For Baan project pricing, Mastech offers the following options:

- Fixed Pricing
- Time and Materials

Alliances and Partnerships

As a Baan International Consulting Alliance Partner and Baan Education Alliance Partner, Mastech has been selected by Baan to deliver integrated solutions to clients with unique enterprise system requirements. With their strong ties to Baan and access to their premier products and services, Mastech is able to maximize the power of Baan technology to benefit clients around the world.

Vertical Market Competencies

Mastech focuses on the automotive, aerospace and defense (A&D), and projects subsectors of the vertical market noted in Exhibit 2. The table also indicates the percentage of Mastech revenues and projects represented by each vertical market.

Exhibit 3 details Mastech's participation in seven broad market categories, in terms of the level of consulting or implementation involvement (e.g., consulting with the client, who will then perform the implementation, or implementing the Baan system for the client).

Exhibit 2

Vertical Market Expertise

Vertical Market	Sub-segment	% of Revenues	% of Projects
Discrete Manufacturing	<ul style="list-style-type: none">• Automotive• Aerospace	100%	100%

Source: Mastech

Exhibit 3

Level of Vertical Market Involvement, by Activity

Vertical Market	Consulting	Implementation
Aerospace & Defense	Low	Low
Automotive	Medium	Medium
Process Industries	Low	Low
Hybrid	High	High
Project Industries	Medium	Medium
Electronics	High	High
General Manufacturing	High	High

Source: Mastech

Strategic Positioning

Mastech's consultants are certified with at least one year of experience in Baan, and all of their Baan consultants also have certifications in Enterprise Modeling, and are bilingual and APICS-certified. Mastech is a Baan Accredited Instructor that can provide client training.

Mastech's Enterprise Package Solutions (EPS) Division focuses solely on the implementation, customization and support of leading ERP packages, including the entire suite of BAAN Finance, Manufacturing, and Distribution modules. The Mastech EPS model is structured around a global army of functional and technical professionals who work in teams, both large and small, to manage or co-manage Baan implementations. Through these services, Mastech provides effective solutions for a wide range of national and international clients in the private and public sectors.

The Mastech team's winning qualifications include:

Emphasis on both functional and technical expertise

With their well-balanced team of functional and technical professionals providing guidance through a Baan implementation, the client will get the best of both worlds—sound advice about the best business practices for their organization, as well as the expertise in Baan technology to make them a reality.

Accountability for deliverables

As an engagement manager, Mastech takes responsibility for the client's implementation and ensures that the deliverables meet expectations.

Plans for the Future

Mastech's Baan practice plans to expand its services in the Automotive, Project, and Aerospace and Defense industries. Mastech also plans to become an Authorized Baan Customization Provider (ABC) by the third quarter of 1998. Mastech's focus markets in North America will continue to be the United States and Canada.

Selected Customer Projects

Exhibit 4 provides three client references and summarizes project specifics. Mastech has served a total of nine North American Baan project customers since entering the Baan services market in 1996.

Exhibit 4

Mastech References

Baan Customer	Industry (Vertical Market or Subsegment)	Project Details
Aurora Electronics	Electronics	Baan Implementation: Mastech's role was to provide technical expertise in the development and customization of reports and forms that were critical for Aurora's enterprise-wide processes to "go live" on schedule.
Propak Systems	Discrete Manufacturing	Baan Implementation: Mastech's role was to provide project planning, process mapping, gap analysis, software installation and stabilization, and develop and deliver key-and end-user training.
Lermer Aircraft	Discrete Manufacturing	Baan Implementation: Mastech's role was to provide customize training and consulting to Lermer's project team.

Source: Mastech

COMPANY HIGHLIGHT

MATHEMATICA, INC.
14 Washington Road
P.O. Box 2392
Princeton, NJ 08540
(609) 799-2600

Dr. Tibor Fabian, President
Public Corporation, OTC
Total Employees: 569
Total Revenue, Fiscal Year End
6/30/82: \$36,181,000
Computer Services Revenue:
\$21,500,000*

THE COMPANY

- Mathematica, Inc., incorporated in 1959, provides technical consulting and research services in economics, management sciences, public policy research, and governmental planning. Mathematica also offers computer systems analysis and design services, systems software products, and microcomputer-based turnkey systems for the credit industry.
- Fiscal 1982 revenue was \$36.2 million, a 2% increase over 1981 revenue of \$35.6 million. Net income rose 44% from \$954,000 in 1981 to nearly \$1.4 million in 1982. A five-year financial summary follows:

*INPUT estimate

MATHEMATICA, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)

ITEM \ FISCAL YEAR	6/82	6/81	6/80	6/79	6/78
Revenue	\$ 36,181	\$ 35,581	\$ 30,632	\$ 24,005	\$ 23,645
• Percent increase from previous year	2%	16%	28%	2%	17%
Income from continuing operations before taxes	\$ 2,164	\$ 1,980	\$ 1,648	N/A	N/A
• Percent increase from previous year	9%	20%	-	-	-
Income from continuing operations after taxes	\$ 1,375	\$ 1,155	\$ 852	\$ 871	\$ 316
• Percent increase (decrease) from previous year	19%	36%	(2%)	176%	N/A
(Loss) from discontinued operations	-	(\$ 201)	(\$ 6)	(\$ 125)	(\$ 43)
Net income	\$ 1,375	\$ 954	\$ 846	\$ 746	\$ 273
• Percent increase from previous year	44%	13%	13%	173%	40%
Earnings per share (a) from continuing operations	\$ 1.26	\$ 1.09	\$ 0.81	\$ 0.83	\$ 0.30
• Percent increase (decrease) from previous year	16%	35%	(2%)	177%	N/A
Earnings per share (a)	\$ 1.26	\$ 0.90	\$ 0.81	\$ 0.71	\$ 0.26
• Percent increase from previous year	40%	11%	14%	173%	N/A

(a) Adjusted to reflect 3-for-2 stock split, effected in the third quarter of fiscal 1982.

- During the third quarter of fiscal 1981, Mathematica discontinued the operations of its System Operations, Inc. subsidiary. The above financials have been reclassified to segregate the results of the discontinued segment. Revenue figures represent continuing operations only.

- System Operations, Inc. provided computerized instant lottery systems and tickets along with consulting services on lottery system development and management.
- Mathematica's fiscal 1982 revenue increased 2% over 1981. A \$4.2 million growth in the company's systems software business was offset largely by a decline of \$3.6 million in consulting and research services revenue.
 - The decline in consulting revenue was due to fewer contracts being performed for civilian departments and agencies of the federal government as a result of the current administration's budgetary restraints.
 - Net income increased 44% in 1982 due to substantial increases in software revenue.
- Product development costs reached \$2.7 million (7% of revenue) in fiscal 1982, as compared to \$1.8 million (5% of revenue) in 1981 and \$1.2 million (4% of revenue) in 1980.
- Revenue for the first half of fiscal 1983, ended December 31, 1982, reached \$17.8 million, a 4% decrease from \$18.6 million for the same period in fiscal 1982. Net income decreased 79% from \$730,000 in fiscal 1982 to \$156,000 in fiscal 1983.
 - Decreases in revenue were due to the decline of consulting services work for the federal government, which was substantially offset by increased computer software revenue.
 - Although second quarter net income was \$454,000, a first quarter net loss of \$298,000 caused net income to decline for the first half of fiscal 1983.
 - During the first quarter, consulting services business operated profitably on 25% less revenue than the previous year's first quarter. The net loss was primarily due to large expenditures for software product development and related marketing cost increases.
- Mathematica currently operates through three wholly owned subsidiaries, all headquartered in Princeton (NJ).
 - Mathematica Products Group, Inc. (MPG) provides systems software products and related educational and consulting services to a wide range of industries. Its primary product is the RAMIS II fourth-generation language and data base management system.
 - Mathematica Policy Research, Inc. (MPR) provides analysis for a wide range of public policy issues primarily to the federal government, including employment, retirement and pensions, public assistance, and health. A small amount of computer systems analysis and design is also performed.

MATHEMATICA, INC.

- Mathtech, Inc. performs technical consulting, research, and computer systems design and development for government, business, institutional, and association clients. Mathtech also offers credit systems and file management software for microcomputers and is a dealer for Vector Graphic, Inc. microcomputers.
- As of June 30, 1982 the company had 569 employees. Currently Mathematica has 518 employees, segmented as follows:

Mathematica Products Group	221
Mathematica Policy Research	149
Mathtech	75
General and administrative (corporate)	<u>73</u>
	518

- Major competitors to Mathematica's data base management software are IBM, Cincom Systems, Cullinet Software, National CSS, and Information Builders.

KEY PRODUCTS AND SERVICES

- INPUT estimates Mathematica's fiscal 1982 computer services revenue at \$21.5 million, generated as follows:

	<u>Percent of Revenue</u>	<u>Revenue (\$ millions)</u>
Software products	77%	\$16.5
Professional services	18	4.0
Turnkey systems	<u>5</u>	<u>1.0</u>
	100%	\$21.5

- Of Mathematica's \$16.5 million in fiscal 1982 software product revenue, an estimated \$200,000 was generated by Mathtech's systems software for microcomputers. Software products provided by the company's MPG subsidiary generated \$16.3 million in revenue. A five-year summary of revenue derived from MPG follows (\$ millions):

ITEM \ FISCAL YEAR	6/82	6/81	6/80	6/79	6/78
Revenue	\$16.3	\$12.1	\$7.9	\$5.3	\$3.5
Percent increase from previous year	35%	53%	49%	51%	N/A

- RAMIS II (Rapid Access Management Information System) is Mathematica's principal software product. It is the newest generation of the RAMIS data base management system developed by the company in 1967. RAMIS II inte-

grates an English-like nonprocedural programming language with a flexible data base management system.

- RAMIS II runs on IBM 360, 370, 43XX, 30XX, and plug-compatible mainframes under OS/VSI, MVS, VM/CMS, and DOS/VS(E).
- RAMIS II consists of the following basic components and ranges in price from \$40,000 to \$80,000, depending on CPU performance ratings.
 - Executive library system catalogs requests and commands.
 - GRAPH produces basic graphics.
 - IRM corrects command errors, and alters and modifies requests.
 - REF provides standard reports from ISAM, VSAM, and sequential files.
 - Communications Interface.
 - Data Base Manager governs data access and modification.
 - Reporter produces tabular reports and creates new files.
 - Records Management is a maintenance component.
 - RAM HELP allows command syntax and keys their use.
 - RAM ERROR provides explanations of errors and suggests corrective action.
 - RAM SERVICE provides dictionary reports and file reorganization routines.
 - Screen Manager provides additional full-screen facilities.
 - Operating systems interfaces.
- Over 15 optional components of RAMIS II are available, ranging in price from \$1,000 to \$14,000. Options include various interfaces; RELATE; FSM, the formatted screen manager; ITC, integrated terminal communications; PLOT high resolution graphics; an SAS interface; and financial planning.
- As of February 1983 there were over 1,000 installations of RAMIS II. Users can also access RAMIS II through one of nineteen service bureaus in the United States, Canada, and Europe.
- RAMIS 3200, introduced by MPG in 1979, is a version of RAMIS II designed for the NCSS Series 3200 minicomputer. Pricing starts at \$50,000. The product is not actively marketed at this time.

- Mathematica offers two multipurpose communications monitors and optional subsystems.
 - The products include:
 - ATLAS, a data communications monitor for use on IBM 360, 370, 43XX, 30XX, or plug-compatible computers running under DOS/VSE Release 2 and above. Pricing starts at \$28,000.
 - MPGSWIFT II, a telecommunications monitor for use with smaller terminal networks on IBM 360, 370, 43XX, 30XX, or plug-compatible computers running under DOS, DOS/VS, or DOS/VSE. The product is priced at \$17,000.
 - Optional subsystems offered with ATLAS and MPGSWIFT include:
 - DES (Data Entry Subsystem), an on-line system designed to facilitate entry of data on 3270-type CRT terminals. Pricing starts at \$5,000.
 - TIPS/FSE (Terminal Interactive Programming Subsystem), which allows for on-line creation and maintenance of systems with a full-screen editor. Pricing starts at \$5,000.
 - ATLAS and MPGSWIFT II are installed at over 100 sites. The systems are marketed either as separate products or in combination with the RAMIS II data base package.
- Mathtech offers two file management software products for microcomputers.
 - DataManagr, developed in 1982, runs on the Vector Graphic micro-computer. The software product is distributed nationwide through the Vector Graphic dealership network and is priced at \$495. There are currently over 500 installations.
 - In May 1983 Mathtech will introduce the DataKeep system for the IBM Personal Computer. The product will be distributed nationwide at a price of \$450.
- Mathtech also offers turnkey systems for the credit industry, all designed to run on Vector Graphic microcomputers. These systems include:
 - ACCEPT (Applications for Consumer Credit Entry and Processing Terminal), which was introduced in 1982. Pricing starts at \$16,500.
 - CASHCALL, also introduced in 1982, a collection management system designed for small- and medium-sized credit agencies. Pricing starts at \$16,500.

MATHEMATICA, INC.

- Recent professional services performed by MPR and Mathtech include:
 - The development of computerized models to forecast shortages of different types of scientists and engineers, as well as assembling data bases on scientific and engineering personnel for the National Science Foundation.
 - The development of a data base of chemical economic information (Toxics Economic Database) for the Environmental Protection Agency.
 - The development of forecasting models of manpower requirements for the Navy Personnel Research and Development Center.
 - A multiyear project sponsored by the National Cancer Institute to provide a computer-based monitoring and reporting system for clinical trials of new anticancer drugs.
 - Services provided by Mathtech to the credit industry, including MATH-SCORE^{T.M.}, a system for new account credit scoring; RISK MONITOR^{T.M.}, a system providing limits for revolving credit; and CREDET^{T.M.}, a statistical credit evaluation system.

INDUSTRY MARKETS

- Mathematica's total fiscal 1982 revenue was derived as follows:

Various commercial companies (cross-industry)	52%
Federal government	45
State and local government	<u>3</u>
	100%
- Substantially all revenue derived from the federal government is for consulting and research performed by MPR and Mathtech.

GEOGRAPHIC MARKETS

- The majority of Mathematica's total fiscal 1982 revenue was derived from the U.S.
 - Approximately 7% of revenue (\$2.5 million) was derived from foreign MPG software sales, principally from England and other Western European countries.
 - Professional services to foreign clients contributed a small percentage of revenue.
- MPG has U.S. branch offices in Boston, Chicago, Houston, Los Angeles, New York City, San Francisco, and Washington, D.C. Foreign offices are located in Canada, France, Switzerland, Norway, West Germany, England, Italy, Australia, Israel, Hong Kong, and Singapore.

- MPR has branch offices in Madison (WI) and Washington, D.C.
- Mathtech has branch offices in Arlington (VA), Bethesda (MD), and Langhorne (PA).

COMPUTER HARDWARE AND SOFTWARE

- Mathematica maintains the following equipment in Princeton:
 - At MPG headquarters:
 - 1 IBM 4331 Group 2 running under DOS/VSE Release 3, used primarily for RAMIS II development.
 - 1 IPL/4446 running under VM, OS/VSI, and DOS/VSE.
 - 1 NCSS 3200 running under VP/CSS.
 - An IBM 360/50 with extended core is used primarily for survey data processing by MPR.
 - The company also has 25 Vector Graphic 3 and Vector Graphic 4 micro-computers installed.

COMPANY HIGHLIGHT

MATHEMATICA, INC.

12 Roszel Road
Princeton, NJ 08540
(609) 799-2600

Dr. Tibor Fabian, President

Public Corporation, OTC

Total Employees: 680

Total Revenues, Fiscal Year End

6/30/80: \$32,072,000

Computer Service Revenues:

\$12,100,000*

THE COMPANY

- Mathematica, Inc., incorporated in 1959, provides technical consulting and research services in economics, management sciences, public policy research and governmental planning. Mathematica also offers systems analysis and design services, proprietary systems software products and turnkey systems.
- Revenues increased 26% from \$25.5 million in FY 1979 to \$32.1 million in FY 1980. Net income rose 13% to \$846,000 in FY 1980 from \$746,000 in FY 1979. A five-year financial summary follows:

MATHEMATICA, INC. FIVE-YEAR FINANCIAL SUMMARY (\$ Thousands, Except Per Share Data) (FYE 6/30)

ITEM \ FISCAL YEAR	1980	1979	1978	1977	1976
Revenues	\$32,072	\$25,549	\$26,499	\$22,670	\$18,870
• Percent increase (decrease) from previous year	26%	(4%)	17%	20%	—
Income before taxes and extraordinary item	\$ 1,750	\$ 1,777	\$ 448	\$ 1,359	\$ 1,385
• Percent increase (decrease) from previous year	(2%)	297%	(67%)	(2%)	—
Net Income	\$ 846	\$ 746	\$ 273	\$ 686	\$ 670
• Percent increase (decrease) from previous year	13%	173%	(60%)	2%	—
Earnings per share	\$ 1.20	\$ 1.06	\$ 0.39	\$ 0.98	\$ 0.96
• Percent increase (decrease) from previous year	13%	172%	(60%)	2%	—

* INPUT estimate

COMPANY HIGHLIGHT/MATHEMATICA, INC.

- Higher FY 1980 revenues were the result of increased federal government research and survey work and increased sales from Mathematica's RAMIS® data base management system.
 - The company's investment in software development was \$809,000 in FY 1980, and \$494,000 in FY 1979.
- Revenue decreases from FY 1978 to 1979 were the result of concluding a large federal government survey assignment that accounted for significant revenues in FY 1978. Lottery-related revenues also declined.
- Decline in net income in FY 1978 was primarily due to an unrecovered contract overrun amounting to \$660,000 before taxes.
- Mathematica's three wholly owned subsidiaries and one majority-owned subsidiary are all headquartered in Princeton (NJ).
 - Mathematica Policy Research, Inc. (MPR) provides analysis for a wide range of public policy issues primarily to the federal government, including employment, retirement and pensions, public assistance and health. A small amount of computer systems analysis and design is also performed.
 - Mathematica Products Group, Inc. (MPG) provides systems software products and related educational and consulting services to a wide range of industries. Its primary product is the RAMIS II data base management system.
 - Mathtech, Inc. performs technical consulting, research and computer systems design and development for government, business, institutional and association clients. Turnkey systems for processing credit applications are also offered.
 - System Operations, Inc. (SOI), a 76%-owned subsidiary established in 1971, provides computerized instant lottery systems and tickets, along with consulting services on lottery systems development and management.
 - Interlot, B.V., located in The Netherlands, was established in 1978 as a wholly owned subsidiary of SOI in order to market foreign lottery services.
 - In FY 1978, SOI acquired a 33% interest in a newly formed joint venture, Games Management Services, which it subsequently sold in fiscal 1979.
 - Mathematica International, Inc., a Domestic International Sales Corporation (DISC), was established by Mathematica in fiscal 1980.

COMPANY HIGHLIGHT/MATHEMATICA, INC.

- In May 1979, Mathematica acquired GBA International, whose principal product is the MPGSWIFTTM teleprocessing monitor. GBA activities were merged into the Mathematica Products Group.
- Major competitors to Mathematica's data base management software are IBM, Cullinane Corporation and National CSS, Inc.

KEY PRODUCTS AND SERVICES

- INPUT estimates Mathematica's fiscal 1980 computer services revenues at \$12.1 million.
 - Approximately \$2.5 million of FY 1980 revenues were for professional services contracts for system design, implementation and data processing performed by MPR and Mathtech.
 - An estimated \$300,000 in revenues were generated by Mathtech's credit management business sales.
 - Revenues derived from software products and related services provided primarily by the company's MPG and SOI subsidiaries generated \$9.3 million in revenues. A five-year financial summary of revenues derived from this business sector follows:

FIVE-YEAR SUMMARY
SOFTWARE PRODUCTS AND RELATED SERVICES
(FYE 6/30)

ITEM \ FISCAL YEAR	1980	1979	1978	1977	1976
Revenues (\$ Millions)	\$9.3	\$6.8	\$6.4	\$4.5	\$2.2
Percentage of total revenues	29%	27%	24%	20%	12%

- RAMIS II (Rapid Access Management Information System) is Mathematica's principal software product, and the newest generation of the RAMIS data base management system developed by the company in 1969. RAMIS II integrates an English-like nonprocedural programming language with a flexible data base management system. This combination increases programmer productivity by providing greater ease in system development, immediate access to critical management information and decreased system maintenance time. The package runs on IBM 360, 370 and 43XX mainframes under OS, VS, MVS, DOS/VS, DOS/VSE and CMS. In 1980, RAMIS II received ICP's \$20 million award.

COMPANY HIGHLIGHT/MATHEMATICA, INC.

- RAMIS II consists of five integrated systems.
 - Data Base Management.
 - Records Management.
 - Report Preparation.
 - Run Executive.
 - Programmer Interface.
- MPG markets RAMIS II and provides product maintenance, training, education and consulting services.
 - Systems are priced according to CPU size. The single price for a basic system operating on a medium-size mainframe is \$22,000; \$43,000 on a large mainframe.
- RAMIS II has been used by over 1,200 clients, primarily commercial businesses and organizations. The package is available at nine service bureaus in the U.S., one in Canada and four in Europe.
- In Spring 1980, MPG announced the availability of a high-resolution RAMIS II Graphics Interface. The interface operates through Tektronics terminals and permits users to produce point plots, line graphs and bar charts.
- Mathematica plans to develop RAMIS II and its related software products to interface with all major operating systems, TP monitors and spoolers available from IBM and independent vendors.
- In Fall 1979, MPG introduced RAMIS 3200, a version of Ramis II designed to perform on the NCSS Series 3200 minicomputer. Both NCSS and Mathematica market the new product.
 - The package will facilitate the establishment of distributed processing systems, since RAMIS 3200 applications are compatible with RAMIS II systems operating on other computers.
- MPGSWIFT, called GBASWIFT prior to the acquisition of GBA International in mid-1979, is a multipurpose telecommunications monitor for use on IBM system 360, 370, 43XX or compatible computers under DOS, DOS/VS or DOS/VSE. The package supports IBM 3270, 2740, 3767 and Teletype Corporation terminals and their plug compatible equivalents. Application languages supported include COBOL, FORTRAN, PL/I, Assembler, RPG II, ADPAC and RAMIS.
 - Two versions of the package are available:
 - MPGSWIFT I is designed for entry-level systems and may be upgraded.
 - MPGSWIFT II is designed for systems handling larger networks.

COMPANY HIGHLIGHT/MATHEMATICA, INC.

- MPGSWIFT offers two optional subsystems:
 - DES (Data Entry Subsystem) is an on-line system designed to facilitate entry of data on 3270-type CRT terminals.
 - TIPS (Terminal Interactive Programming Subsystem) allows for on-line creation and maintenance of systems.
- MPGSWIFT is installed at over 100 sites and is priced from \$9,500. The system is marketed both as a separate product and in combination with the RAMIS data base package.
- Professional services performed by MPR for the design, development and implementation of two computerized state welfare systems have been funded by the U.S. Department of Health and Human Services. MPR is also analyzing the cost and effect of these monthly reporting systems to determine whether welfare payments are becoming more equitable and accurate as a result. Mathematica has derived \$7.9 million in revenues from these contracts in the four fiscal years 1977 through 1980.
 - Work on a contract for the State of Colorado began in early FY 1978 and is expected to be completed in FY 1981.
 - In June 1978, MPR was awarded a \$1.9 million, two-year contract with the State of Vermont. In FY 1980, a contract was awarded for the continuation of the design, development and implementation of the system and for completion of the documentation.
- SOI provides computer programs and system development services for the implementation and operation of state lotteries and also produces computer-generated lottery tickets.
- Mathtech began a project for the provision of a clinical trials monitoring service of new anti-cancer drugs for the National Cancer Institute (NCI). The study will provide NCI with a centralized data management system capable of organization and easy manipulation of vast amounts of data.
- Mathtech's services to the credit industry include the use of MATHSCORE^{T.M.}, a system providing new accounts scoring formulas, and RISK MONITOR^{T.M.}, a system providing limits for revolving credit.
 - Mathtech also markets MATHEASY^{T.M.}, a turnkey system for revolving and installment credit applications. MATHEASY runs on DEC mini-computer systems ranging in size from the PDP-11/03 to the VAX Super-mini.
 - The system sells for \$22,500 to \$65,000, exclusive of hardware.

INDUSTRY MARKETS

- Mathematica's FY 1980 revenues are distributed as follows:

	Percent of Revenues (6/80)	Revenue Value (\$ Millions)
Federal government	63%	\$20.4
Varied commercial and institutions	34	10.8
State government	<u>3</u>	<u>0.9</u>
	100%	\$32.1

- Substantially all revenue derived from the federal government is for consulting and research performed by MPR and Mathtech.

GEOGRAPHIC MARKETS

- Approximately 91% of FY 1980 revenues were derived domestically, and less than 10% came from foreign markets.
- In addition to its Princeton (NJ) headquarters, Mathematica maintains seven offices and 14 project site offices concerned principally with consulting and research activities.
 - MPR offices are located in Denver, Madison (WI), Montpelier (VT) and Washington (DC).
 - Mathtech maintains offices in Arlington (VA), Bethesda (MD) and Palo Alto (CA).
- In addition to Princeton headquarters, nine software-related offices are located in the U.S. and one in England.
 - MPG maintains offices in Boston, El Segundo and Larkspur (CA), Houston, New York, Portland, Rolling Meadows (IL), Washington (DC) and London.
 - Foreign representatives are located in Italy and Switzerland.
 - A plant for the production of computerized lottery tickets is leased in Schijndel, The Netherlands.

COMPUTER HARDWARE

- Mathematica maintains the following equipment at its Princeton headquarters:
 - At MPG headquarters:

COMPANY HIGHLIGHT/MATHEMATICA, INC.

- . One IBM 4331 running under DOS/VSE used primarily for RAMIS development.
- . One NCSS 3200 running under VP/CSS.
- An IBM 360/50 with extended core is used primarily for survey data processing by MPR.
- DEC PDP-11/03 and -11/34 minicomputers are used for credit system development.
- The company also maintains numerous Vector Graphic System B micro-computers.



Vendor Profile

A Publication from INPUT's Vendor Analysis Program

August 1997

MATRIX MARKETING INC.



MATRIX MARKETING INC.

a Cincinnati Bell company

201 East Fourth Street
Cincinnati, OH 45202

Phone: (513) 397-6622

Fax: (513) 723-9030

Internet: <http://www.matrixx.com>

153 Avenue d'Italie
75013 Paris, France

Phone: 011-331-53-606060

Fax: 011-331-53-605360

President & CEO:	David F. Dougherty
Status:	Subsidiary
Parent:	Cincinnati Bell Inc.
Employees:	15,000 (6/97)
Revenue:	\$367,100,000
Fiscal Year End:	12/31/96

Key Points

- MATRIX Marketing Inc. is a leading single-source provider of outsourced customer management solutions.
- In July 1997, MATRIX began handling customer service calls for DIRECTV from its newly opened call center facility in Moore, Oklahoma.
- In December 1996, with the release of e-mail management, MATRIX introduced CybeResponse™, a package of outsourced customer service solutions for electronic communications via the Internet.
- In November 1996, MATRIX announced an agreement to acquire Software Support, Inc. (SSI), a provider of outsourced technical support.
- In August 1996, MATRIX acquired Scherers Communications, Inc., a supplier of interactive voice response (IVR).

Company Description

MATRIX, founded in 1988, is a single-source provider of dedicated customer service and sales coverage programs to major corporations in the communications, technology, financial, consumer products, and direct response industries. The company complements these programs with inbound and outbound campaign capabilities, market research, fulfillment services, database expertise, and interactive technology.

MATRIX is a wholly owned subsidiary of Cincinnati Bell Inc., a supplier of telecommunications systems, marketing, and billing services to customers in the U.S. and internationally.

During 1996, MATRIX contributed 22% of Cincinnati Bell's revenue, and 16% of its operating income, excluding special items.

Organization and Structure

Headquartered in Cincinnati (OH), MATRIX has 23 call centers located throughout the U.S. and Europe.

The company has 21 call centers domestically, located in Appleton (WI); Cedar City, Logan, Ogden (two centers), Orem and Salt Lake City (four centers)(UT); Cincinnati and Norwood (OH); Colorado Springs and Pueblo (CO); Heathrow and Maitland (FL); Houston (TX); Moore (OK); Omaha and Lincoln (NE); and Tucson (AZ).

MATRIX has international subsidiaries, with call centers, located in Paris (France) and Newcastle-Upon-Tyne (U.K.).

Key MATRIX executives are summarized in Exhibit 1.

Exhibit 1

MATRIX Marketing Inc. Key Executives

Name	Title
David F. Dougherty	President and CEO
Ronald E. Schultz	Sr. VP and COO
Jeffery P. Poland	Sr. VP, Finance and Accounting
Tom L. Kirkpatrick	VP, Market Development
Ted J. Cwiok	VP, Corporate Technology
Peter D. Lytle	VP, Operations
Michael W. Callaghan	VP, Corporate Development and Special Projects
Karen R. Bowman	VP, General Counsel
Robert T. Ashcroft	General Manager, Europe
Elizabeth M. Stites	Dir. Corporate Marketing

MATRIX is comprised of eight divisions as follows:

- Inbound Division
- Outbound Division
- Direct Broadcast Satellite Division
- Business Division
- Research Division
- Custom Services Division
- Software Support Division
- Interactive Services Division

Company Strategy

MATRIX's mission is "to deliver superior value to our clients through high-quality contact with their customers, building long-term loyalty, and high levels of customer satisfaction."

The company's stated objective is "to help companies make better, more profitable connections with their customers by providing outsourced customer management solutions."

With these goals and objectives in mind, MATRIXX has positioned itself as the top quality provider of service in its market.

Financials

MATRIXX's 1996 revenue reached approximately \$367.1 million, an increase of 35% over revenue of \$271.1 million in 1995.

A four-year revenue summary is shown in Exhibit 2.

- The company reported an operating income of \$43.7 million in 1996, compared to an

operating loss of \$7.3 million in 1995.

Excluding special charges, operating income rose to \$45.7 million in 1996, a 42% increase over the previous year.

- Special charges included \$2.0 million of in-process research and development costs that were expensed in connection with acquisitions in 1996.
- Revenue growth was primarily attributed to revenue from DIRECTV and MATRIXX's telecommunications and technology clients.
- MATRIXX attributed approximately \$6 million in revenue to acquisitions during 1996.

Exhibit 2

MATRIXX Marketing Inc. Four-Year Revenue Summary (\$ Millions)

Item	Fiscal Year			
	1996	1995	1994	1993
Revenue	\$367.1	\$271.1	\$226.1	\$108.2
• Percent change from previous year	35%	20%	109%	N/A
Operating income (loss)	\$43.7	\$(7.3) (a)	\$22.6	\$2.0
• Percent change from previous year	699%	(113%)	*	N/A

Source: MATRIXX Marketing Inc.

(a) Includes special charges related to MATRIXX's French subsidiary.

* Change is greater than 1,000 percent.

MATRIXX is expected to be one of two subsidiaries contributing to the majority of Cincinnati Bell's revenue in 1997. This growth is expected to result from an increase in new customers as more companies begin to outsource customer management for cost efficiencies.

Interim Results

Revenue for the six months ending June 30, 1997, was \$226.4 million, compared to revenue of \$157.4 during the same period in 1996.

- Dedicated services for the six month period rose \$62.9 million over the same period the previous.
- Technology and telecommunications industry revenue for the period grew \$2.9 million year-to-year.
- International revenue for the period increased \$1.4 million over the previous year.

Market Financials

MATRIX provides services primarily to major corporations in the communications, consumer products, technology, financial, and 800-number direct response industries.

Acquisitions

In November 1996, MATRIX announced an agreement to acquire Heathrow (FL)-based Software Support, Inc. (SSI), a provider of technical assistance over the telephone to users of computer hardware and software. The terms of the agreement were not disclosed.

- SSI provides Advanced Technical Support (ATS) services for networks as well as supporting routers, bridges, integrated hubs, and switches.
- SSI had revenue of \$20 million for the 12 months ended September 30, 1996.
- SSI had approximately 500 employees at facilities in Heathrow (FL), Houston (TX), and Salt Lake City (UT).
- This acquisition is intended to allow MATRIX to quickly expand customer service offerings in the technical helpdesk market.

In August 1996, MATRIX acquired Scherers Communications, Inc., a Columbus (OH)-based IVR (interactive voice response) and Internet service agency.

- In addition to IVR and Internet solutions development, Scherers offers voice messaging, teleconferencing services, and crisis communication services.
- Scherers had approximately 50 employees and a client base consisting of Fortune 500 companies.
- With this acquisition, MATRIX secured a technology platform key to integrating IVR with MATRIX's existing live agent call offering, enhancing MATRIX's existing customer service and sales coverage.
- Scherers' on-line expertise also contributes to the development of MATRIX's Internet-based services.

Employees

As of June 1997, MATRIX had approximately 15,000 employees, compared to 12,000 one year prior.

Key Products and Services

Through MATRIX's 21 domestic centers, the company operates 7,000 computer-integrated workstations 24 hours a day, 365 days a year, and handles as many as 200 million calls annually throughout the U.S.

MATRIX hires its own agents and provides them with up to four weeks of customized training to learn about the needs of its customers.

The company uses advanced telephony and computer systems designed to interface with its clients' systems and databases.

MATRIX's integrated package of services offered includes:

- Custom Services—MATRIX designs and manages customized client programs for many Fortune 500 companies.

- Call center management
- CSR training
- Quality monitoring and reporting
- Integration of multiple systems
- Direct mail/fulfillment capability
- Standard and custom reporting
- Bilingual capabilities

- Business-to-Business Services—MATRIX's business-to-business sales and service programs provide outbound sales coverage to support the client's sales and marketing efforts. MATRIX sales and customer service personnel act as the sales and/or marketing service representative for the client. Customized sales and service programs include:

- Full account management for ongoing sales coverage
- Short-term sales campaigns
- Lead-generation programs
- Database management
- Product recall
- Customer service support

- International Services—MATRIX's Western European operations offer business-to-business and business-to-consumer telephone, including toll-free services, direct response services, and facilities management. The company provides:

- Coverage of all major countries
- Multilingual capabilities
- Integration with U.S. systems
- Inbound/outbound sales and service
- Full account management/business-to-business sales
- Dedicated customer service, technical, and sales support
- Research services

- Inbound Services—MATRIX offers shared and semi-dedicated live operators that provide consumer-oriented marketing services, enabling high-volume capacity. Programs include:

- Direct response telephone marketing
- Lead generation/qualification
- Catalog ordering
- Dealer referral capabilities
- Database management systems
- Integrated fulfillment services
- Bilingual capabilities

- Outbound Services—MATRIX offers a variety of programs, including financial, insurance, and telecommunications. Outbound calls are placed only for clients with pre-established relationships with the businesses or consumers being contacted. Services offered include:

- Lead generation/qualification
- Sales acquisition
- Customer retention
- Upsells, cross-sells, and customer service
- Insurance licensed CSRs (if applicable)

- **Marketing Research Services—MATRIXX** offers marketing research and consulting services to support marketing programs. Services offered include:
 - Qualitative and quantitative research
 - Custom designs and analyses
 - Computerized telephone surveys
 - Focus group facilities
 - New product development research
 - Segmentation studies
 - Customer value management research
- **Software Support Services—MATRIXX** offers technical product support services for the following:
 - Major PC hardware companies
 - Software publishers
 - Networking companies
- **Interactive Services—MATRIXX** offers Internet capabilities and provides IVR systems that may be custom-built with multiple menu layers and lengthy voice capture options. Services to respond to consumer inquiries include:
 - Internet e-mail response, dealer referral, and fulfillment services
 - Screened and trained "cyber reps"
 - Integration of technology and services for Internet and IVR capabilities
 - Implementation and execution
- **CybeResponse™**—Introduced in December 1996, CybeResponse is a package of outsourced customer service solutions designed to help companies effectively manage electronic communications with

customers via the Internet. E-mail management is CybeResponse's first available service.

Clients

MATRIXX represents more than 600 companies, the majority of which come from the communications, financial services, consumer products, technology, and direct response industries.

Marketing and Sales

MATRIXX markets its services through its direct sales force.

Competition

MATRIXX's major competition comes from in-house call center operations.

The company also faces competition from American Transtech, a division of AT&T, and Maritz.

Assessment

MATRIXX feels that its strengths include its focus on target industries, stability through a secure parent company, its value-added services, and providing a full range of customer management solutions.

Parent Company

Cincinnati Bell Inc.
201 East Fourth Street
P.O. Box 2301
Cincinnati, OH 45202
Phone: (513) 397-9900

Vendor Profile

A Publication from INPUT's Vendor Analysis Program – U.S.

October 1996

MATRIX Marketing Inc.

President & CEO: David F. Dougherty
201 East Fourth Street
Cincinnati, OH 45202

Phone: (513) 397-6488

Fax: (513) 723-9030

Internet: <http://www.matrixx.com>



MATRIXX MARKETING INC.

a Cincinnati Bell company

Status:	Subsidiary
Parent:	Cincinnati Bell Inc.
Employees:	12,000 (6/96)
Revenue:	\$271,100,000 (12/95)
Fiscal Year End:	12/31/95

Key Points

- MATRIXX Marketing Inc. is a leading provider of outsourced customer management solutions.
- In August 1996, MATRIXX acquired Scherers Communications, Inc., a supplier of interactive voice response (IVR).
- In May 1996, MATRIXX began handling customer service calls for DIRECTV from its newly expanded Norwood (OH) facility.

- In January 1996, MATRIXX announced the appointment of Garth A. Howard to the position of president of the Direct Broadcast Satellite Division. In this position Mr. Howard is responsible for strategic direction of the MATRIXX/DIRECTV partnership.

Company Description

MATRIXX, founded in 1988, is a single-source provider of dedicated customer service and sales coverage programs to major corporations in the communications, technology, financial, consumer products, and direct response industries. The company complements these programs with inbound and outbound campaign capabilities, market research, fulfillment services, database expertise, and interactive technology.

MATRIX X is a wholly owned subsidiary of Cincinnati Bell Inc., a supplier of telecommunications systems, marketing, and billing services to customers in the U.S. and internationally.

During 1995, MATRIX X contributed 19% of Cincinnati Bell's revenue, and 14% of its operating income, excluding special items.

Organization and Structure

Headquartered in Cincinnati (OH), MATRIX X has 18 call centers located throughout the U.S. and Europe.

The company has 16 call centers domestically, located in Appleton (WI); Cincinnati and Norwood (OH); Colorado Springs and Pueblo (CO); Maitland (FL); Tucson (AZ); Omaha and Lincoln (NE); and Salt Lake City (three centers), Ogden (two centers), Orem, and Cedar City (UT).

MATRIX X has international subsidiaries, with call centers, located in Paris (France) and Newcastle-Upon-Tyne (U.K.).

Key MATRIX X executives are summarized in the following exhibit.

Exhibit
MATRIX X Key Executives

Name	Title
David F. Dougherty	President and CEO
Ronald E. Schultz	Sr. VP and COO
Tom Kirkpatrick	VP Market Development
George Rewick	VP Corporate Technology
George Vogel	Group VP, Resource Unit Services
Michael Callaghan	VP Corporate Development Strategy and Marketing

MATRIX X is comprised of six divisions as follows:

- Inbound Division
- Outbound Division
- Direct Broadcast Satellite Division
- Business Division
- Research Division
- Customer Services Division

Company Strategy

MATRIX X's mission "is to deliver superior value to our clients through high-quality contact with their customers, building long-term loyalty and high levels of customer satisfaction."

The company's stated objective is "to help companies make better, more profitable connections with their customers by providing outsourced telephone marketing solutions."

With these goals and objectives in mind, MATRIX X has positioned itself as the top quality provider of service in its market.

Financials

MATRIX X's 1995 revenue reached approximately \$271.1 million, an increase of 20% over revenue of \$226.1 million in 1994.

A three-year revenue summary is shown on the following page.

The company reported an operating loss of \$7.3 million in 1995, as compared to operating income of \$22.6 million in 1994. Excluding special charges, operating income rose to \$32.3 million in 1995, a 43% increase over the previous year. Special charges included the following:

- A \$39.4 million after-tax charge to write down goodwill associated with MATRXXX's 1990 acquisition of its French subsidiary
- An \$8.5 million after-tax charge to terminate the interest rate and currency swap agreement used to hedge the French MATRXXX investment

- Revenue growth was primarily attributed to revenue from DIRECTV, which continues to experience strong demand for its digital satellite TV service.

MATRXXX Marketing Inc.
Three-Year Revenue Summary
 (\$ Millions)

Item	Fiscal Year		
	1995	1994	1993
Revenue	\$271.1	\$226.1	\$108.2
• Percent change from previous year	20%	109%	N/A
Operating income (loss)	\$(7.3)	\$22.6	\$2.0
• Percent change from previous year	(113%)	*	N/A

(a) Includes special charges related to MATRXXX's French subsidiary.

* Change is greater than 1,000 percent.

MATRXXX is expected to be one of two subsidiaries contributing to the majority of Cincinnati Bell's revenue in 1996. This growth is expected to result from an increase in new customers, as more companies begin to outsource telephone marketing for cost efficiencies.

Interim Results

Revenue for the six months ending June 30, 1996, rose to \$157.4 million, an increase of 15% over revenue of \$137.1 during the same period in 1995.

- Custom services increased \$9.0 million, primarily from three new contracts.
- Inbound services revenue increased \$3.2 million due to travel and charge care services.

- Business-to-business revenue grew \$2.9 million, primarily due to extensions of programs from existing customers.
- International revenue increased \$2.7 million.
- Technology revenue grew \$2.2 million due to additional business with a satellite broadcast customer.

Market Financials

MATRXXX provides services primarily to major corporations in the communications, consumer products, technology, financial, and 800-number direct response industries.

Acquisitions

In August 1996, MATRXXX acquired Scherers Communications, Inc., a Columbus (OH)-

based IVR (interactive voice response) and Internet service agency.

- In addition to IVR and Internet solutions development, Scherers offers voice messaging, teleconferencing services, and Crisis Communication services.
- Scherers had approximately 50 employees and a client base consisting of Fortune 500 companies.
- With this acquisition, MATRXXX secures a technology platform key to integrating IVR with MATRXXX's existing live agent call offering, enhancing MATRXXX's existing customer service and sales coverage.
- Scherers' on-line expertise will also contribute to the development of MATRXXX's Internet-based services.

Employees

As of June 1996, MATRXXX had approximately 12,000 employees.

Key Products and Services

Through MATRXXX's 18 call centers, the company operates 6,300 computer-integrated workstations 24 hours a day, 365 days a year, and handles as many as 200 million calls annually throughout the U.S.

MATRXXX hires its own agents and provides them with up to four weeks of customized training to learn about the needs of its customers.

The company uses advanced telephony and computer systems designed to interface with its clients' systems and databases.

MATRXXX's integrated package of services offered includes:

- Custom Services—MATRXXX designs and manages customized client programs for many Fortune 500 companies.
 - Call center management
 - CSR training
 - Quality monitoring and reporting
 - Integration of multiple systems
 - Direct mail/fulfillment capability
 - Standard and custom reporting
 - Bilingual capabilities
- Business-to-Business Services—MATRXXX's business-to-business sales and service programs provide outbound sales coverage to support the client's sales and marketing efforts. Customized sales and service programs include:
 - Full account management for ongoing sales coverage
 - Short-term sales campaigns
 - Lead-generation programs
 - Database management
 - Product recall
 - Customer service support
- MATRXXX's personnel services include taking orders, selling by telephone, and providing information about clients' promotion plans, quantity discounts, and new products.
- MATRXXX sales and customer service personnel act as the sales and/or marketing service representative for the client.
- International Services—MATRXXX's Western European operations offer business-to-business and business-to-consumer telephone, including toll-free

services, direct response services, and facilities management. The company provides:

- Coverage of all major countries
- Multilingual capabilities
- Integration with U.S. systems
- Inbound/outbound sales and service
- Full account management/business-to-business sales
- Dedicated customer service, technical, and sales support
- Research services
- Inbound Services—MATRIX offers shared and semi-dedicated live operators that provide consumer-oriented marketing services, enabling high-volume capacity. Programs include:
 - Direct response telephone marketing
 - Approximately 70 % of MATRIX's calls are inbound.
 - Representatives handle calls 24 hours per day.
 - Lead generation/qualification
 - Catalog ordering
 - Dealer referral capabilities
 - Database management systems
 - Integrated fulfillment services
 - Bilingual capabilities
- Outbound Services—MATRIX offers a variety of programs, including financial, insurance, and telecommunications. Outbound calls are placed only for clients with pre-established relationships with the businesses or consumers being contacted.

Services offered include:

- Lead generation/qualification
- Sales acquisition
- Customer retention
- Upsells, cross-sells, and customer service
- Insurance licensed CSRs (if applicable)
- Marketing Research Services—MATRIX offers marketing research and consulting services to support marketing programs. Services offered include:
 - Qualitative and quantitative research
 - Custom designs and analyses
 - Computerized telephone surveys
 - Focus group facilities
 - New product development research
 - Segmentation studies
 - Customer value management research
- Fulfillment Services—MATRIX offers turnkey operation from phone call to shipping
 - Full letter shop services
 - Ink jet printing/addressing
 - Personalized laser printed letters/documents
 - On-line fulfillment/customer services
 - Data entry
 - Credit card processing
 - Mail order processing
 - Custom literature and product kit assembly

- Interactive Services—MATRIXX offers Internet capabilities and provides IVR systems that may be custom-built with multiple menu layers and lengthy voice capture options. Services to respond to consumer inquiries include:
 - Internet E-mail response, dealer referral, and fulfillment services
 - Screened and trained "cyber reps"
 - Integration of technology and services for Internet and IVR capabilities
 - Implementation and execution

Clients

MATRIXX represents more than 600 companies, the majority of which come from the communications, financial services, consumer products, high technology, and direct marketing industries.

In August 1996, MATRIXX announced a new outsourcing agreement with Hitachi PC Corporation USA, a newly formed, San Jose (CA)-based subsidiary of Hitachi Japan.

- Hitachi PC is a manufacturer of mobilized computing technologies.
- According to the agreement, MATRIXX will provide help desk support for Hitachi PC's new notebook computers, which began shipping in mid-May.
- MATRIXX will also provide fulfillment services for accessories and supplies for Hitachi PC customers.

In April 1996, MATRIXX entered into an agreement with Gatorade to handle customer service calls for a new bottle cap promotion. MATRIXX handled all customer service inquiries about the contest and fulfillment of the contest rules via Gatorade's 800 numbers.

In 1994, MATRIXX entered into a long-term outsourcing agreement, through 1999, with DIRECTV, Inc., a unit of Hughes Electronics Corporation and a leading direct broadcast satellite (DBS) provider.

- Under the agreement, MATRIXX serves as the complete customer service division for DIRECTV, and has done so since the company began offering DBS service in 1994.
- In response to its growing relationship with DIRECTV, MATRIXX created its Direct Broadcast Satellite Division in January 1995.
- The outsourced customer service and sales support agreement is MATRIXX's largest contract.
- In May 1996, MATRIXX began handling all calls for DIRECTV out of its Norwood (OH) Center. Previously, the calls had been handled from the Salt Lake City and Ogden (UT) facilities.

A sampling of MATRIXX's outsourcing clients include Microsoft, AT&T, SkyTel, ConAgra, U.S. Healthcare, American Express, Clairol, Carnation, and the American Red Cross.

Marketing and Sales

MATRIXX markets its services through its direct sales force.

Competition

MATRIXX's major competition comes from in-house call center operations.

The company also faces competition from American Transtech, a division of AT&T, and Maritz.

Assessment

MATRIXX feels that its strengths include:

- Its focus on target industries and its clear strategy
- Stability through a secure parent company
- Value-added services
- A full range of customer management solutions

Parent Company

Cincinnati Bell Inc.
201 East Fourth Street
P.O. Box 2301
Cincinnati, OH 45202
Phone: (513) 397-9900
Total Revenue (12/31/95): \$1,336.1 million



Vendor Profile

A Publication from INPUT's Vendor Analysis Program – U.S.

April 1996

May & Speh, Inc.

Chairman: Albert J. Speh
President & CEO: Lawrence Speh
1501 Opus Place
Downers Grove, IL 60515-5713
Phone: (708) 964-1501
Fax: (708) 719-0447

May & Speh

Status: Public
Employees: 334 (4/96)
Revenue: \$61,641,000
Fiscal Year End: 9/30/95

Key Points

- May & Speh is a direct marketing services and processing/outsourcing firm originally established in 1947.
- In March 1996, May & Speh made an initial public offering of approximately 6.7 million shares of its common stock.
- Recent applications added to the network include:
 - Credit Card Information System
 - Retail Credit Information System
 - Customer Profile Analysis

- Credit Card Acquisition System
- Proximity Assignment Selection System

Company Description

May & Speh provides computer-based information management services, primarily to clients with significant direct marketing requirements.

- Direct marketing services provided by May & Speh include database creation, data warehousing, predictive behavioral modeling, list processing, and data enhancement.
- May & Speh also provides data processing outsourcing services.
- May & Speh's services are complementary and allow the company to leverage its

investment in its data center as well as its core competencies in customized software systems development, large database management, high-speed data processing, and data center management.

In March 1996, May & Speh made an initial public offering of 6.7 million shares of common stock. Of the shares to be offered, approximately 3.35 million are being sold by May & Speh and the remainder by certain stockholders. Estimated net proceeds of \$33.5 million will be used for working capital and general corporate purposes.

Organization and Structure

May & Speh's key executives are summarized below:

May & Speh Key Executives

Name	Title
Albert J. Speh	Chairman
Lawrence Speh	President & CEO
Terrance C. Cieslak	Chief Technology Officer
Michael J. Loeffler	EVP of Direct Marketing
Willard E. Engel, Jr.	Chief Accounting Officer
Claudia J. Colalillo	SVP of Organizational Development
Robert E. Early	Chief Financial Officer
Joseph C. Grossestreuer	VP Outsourcing
Edward N. Fares	VP Systems Management and Integration

May & Speh operates two divisions as follows:

- The Direct Marketing Services division specializes in database system design, development, and maintenance; data enhancement; modeling and analysis; and list processing.
- The Systems Management and Integration division provides outsourcing services for the management of all or a portion of a client's data center operations.

Individually, the divisions drive technology investments and core competencies specific to their market demands. Together, the divisions provide a collaborative technology environment to create and manage custom information management solutions.

May & Speh has one facility in Downers Grove (IL).

Company Strategy

May & Speh's growth strategy includes:

- Increasing sales to existing clients through higher volume levels and cross-selling additional service opportunities
- Pursuing new clients and broadening its geographic coverage
- Introducing new, increasingly sophisticated database management services
- Developing additional industry expertise to allow the company to provide direct marketing services to the telecommunications, utilities, entertainment, high technology, and health care industries
- Exploring strategic acquisitions and alliances

Financials

May & Speh's fiscal 1995 revenue reached \$61.6 million, a 19% increase over fiscal 1994 revenue of \$51.7 million. Net income reached \$7.9 million, a 36% increase over \$5.8 million for fiscal 1994. A five-year financial summary is shown on the following page.

May & Speh, Inc.
Five-Year Financial Summary
(\$ Millions, except per share data)

Item	Fiscal Year				
	9/95	9/94	9/93	9/92	9/91
Revenue	\$61.6	\$51.7	\$41.8	\$32.2	\$30.1
• Percent change from previous year	19%	24%	30%	7%	N/A
Income before taxes	\$12.5	\$9.5	\$5.6	\$2.6	\$3.3
• Percent change from previous year	32%	70%	115%	(21%)	N/A
Net income	\$7.9	\$5.8	\$3.4	\$1.6	\$1.9
• Percent change from previous year	36%	71%	113%	(16%)	N/A
Earnings per share	\$0.39	\$0.26	\$0.15	\$0.07	\$0.08
• Percent change from previous year	50%	73%	114%	(13%)	N/A

Of the \$9.9 million revenue increase during fiscal 1995, \$6.2 million was attributed to services provided to new clients and the remainder was due to increased demand for services by existing clients.

- Direct marketing services revenue increased 23%.

- Outsourcing services revenue increased 7%.

Revenue Analysis by Product/Service

Approximately 79% of May & Speh's fiscal 1995 revenue was derived from direct marketing services and 21% from outsourcing services. A three-year summary of source of revenue follows:

May & Speh, Inc.
Three-Year Source of Revenue Summary
(\$ Millions)

Product/Service	Fiscal Year					
	9/95		9/94		9/93	
	Revenue \$	Percent of Total	Revenue \$	Percent of Total	Revenue \$	Percent of Total
Direct marketing services	\$48.4	79%	\$39.4	76%	\$32.2	77%
Outsourcing services	13.2	21%	12.3	24%	9.6	23%
Total	\$61.6	100%	\$51.7	100%	\$41.8	100%

Interim Results

Revenue for the three months ending December 31, 1995 reached \$16.0 million, an 11% increase over \$14.4 million for the same period in 1994. Net income was \$1.66 million, compared to \$1.9 million for the same period a year ago.

- Of the \$1.6 million increase in revenue, \$0.9 million was attributed to services provided to new clients and the remainder was due to increased demand for services by existing clients.
- Direct marketing services revenue increased 12% to \$12.3 million.
- Outsourcing services revenue increased 9% to \$3.7 million.

Market Financials

May & Speh's direct marketing and outsourcing clients are primarily in the financial services, consumer goods, insurance, and retail industries.

The company's 20 largest clients accounted for approximately 71% of fiscal 1995 revenue. Sears and Capital One Bank represented 17% and 10.6% of total fiscal 1995 revenue, respectively.

Geographic Markets

One hundred percent of May & Speh's fiscal 1995 revenue is derived from the U.S.

Employees

As of December 31, 1995, May & Speh had 346 employees, segmented as follows:

Direct marketing and database services.....	229
Data center operations.....	85
Finance and administration.....	<u>32</u>
	346

The company currently has 334 employees.

Key Products and Services

Direct Marketing Services

Database Management Services offers technical skills and marketing expertise to create, maintain, and support database applications on micro-midrange or mainframe processing platforms (including DB2, IDMS-R, PCs and workstations).

Direct Mail Services include personalized printing and labeling; National Change of Address (NCOA), NIXIE, LS, and Address Change PLUS; Delivery Sequence File (DSF); merge/purge; Zip Code correction/validation; postal presorting and qualification; and Zip+4 coding.

Data Enhancement Services (including demographics, purchase behavior and geodemographic targeting systems for more than 100 million individuals and households) offers lifestyle profiling of customers and prospects.

Modeling and Analysis Services aid customers in targeting unique segments, identifying new markets, communicating more effectively and increasing sales to current customers.

Direct marketing clients typically do not operate under formal contracts, but have traditionally maintained multiyear relationships with May & Speh.

Outsourcing Services

May & Speh's primary outsourcing service is to manage all or a portion of a client's information processing needs on a cost-effective basis from May & Speh's data center.

- After migrating their workload to May & Speh's data center, clients retain direct

access to their information from their remote sites.

- May & Speh also provides, to a much lesser extent, applications outsourcing services that include the replacement of a client's in-house technical development staff.

The primary outsourcing services provided include migration (takeover and turnover) support, on-line and batch processing capacity, technical support, help desk access and support, backup and recovery, disaster recovery services, operations support, account management, media (tapes, documents, and high-speed DASD subsystems management and handling), production control, telecommunications, and network management support.

May & Speh's systems operations and utility processing services are supported by its \$60 million data center in Downers Grove.

- The center houses a Hitachi Data Systems GX system, as well as IBM RS/6000 and Prime midrange systems.
- More than 120 software programs are available, including DB2 and IDMS-R database management systems; various fourth-generation languages; report writers; data utilities; data library managers; various programming managers; statistical and graphics packages; and packages for a range of user applications, including marketing, manufacturing, retail, medical, and financial.
- May & Speh operates an X.25 telecommunications network supplying clients with remote access from virtually any U.S. location via a local phone call. The data center is configured to support more than 800 telecommunications circuits.

- The Data Center Help Desk provides direct operational support 24 hours a day.

Outsourcing clients typically operate under contracts, usually three years in length.

Clients

May & Speh currently provides direct marketing services for approximately 180 clients, including Fortune 500 companies and other large and medium-sized companies.

- Clients include Capital One Bank, CUNA Mutual Insurance Society, Inc., Intel Corporation, Mead Johnson Pharmaceuticals, and Sears.
- The 20 largest direct marketing customers represented approximately 83% of May & Speh's direct marketing revenue in fiscal 1995.

May & Speh currently provides outsourcing services to approximately 65 clients. These clients are located primarily in the midwestern U.S.

- Clients include Bell & Howell Company, Continental Grain Company, DeVry, Inc., and Rand McNally & Company.
- The 20 largest outsourcing clients represented approximately 85% of May & Speh's outsourcing revenue in fiscal 1995.

Marketing and Sales

May & Speh markets its direct marketing and outsourcing services through separate direct sales forces.

Alliances

May & Speh has alliances/marketing agreements with various vendors, including the following:

- In 1995, May & Speh formed an alliance with Credit Strategy Management (CSM), a modeling and analysis firm. CSM founders John Coffman and Barbara Thornton are recognized leaders in the credit card industry, having pioneered the analysis and use of detailed credit bureau data. In 1996 the four principals of CSM joined May & Speh and will lead a new May & Speh division, Credit Strategy Management.
- May & Speh has an alliance with Megaplex Software for Megaplex's Fast Count Engine.
- May & Speh participates in a joint venture with Data Dimensions related to data entry.

Competition

In the direct marketing area, competitors include Acxiom Corporation, Database America Companies, Donnelley Enterprise Solutions, Harte-Hanks, Metromail and NeoData Services.

In the outsourcing area, competitors include Affiliated Computer Services, Genix Group, Lockheed Martin, PKS Information Services, Power Computing Company, CSC, and Perot Systems.

INPUT Assessment

May & Speh's strengths include:

- Customized data management solutions for its direct marketing services
- Long-term client relationships and recurring revenue streams
- Targeting market strategy for its direct marketing services
- Strong financial performance

Challenges over the coming year include:

- Managing growth
- Handling intense competition

Vendor Profile

A Publication from INPUT's Vendor Analysis Program - U.S.

October 1994

May & Speh

Chairman: Albert J. Speh
President: Lawrence Speh
1501 Opus Place
Downers Grove, IL 60515-5713
Phone: (708) 964-1501
Fax: (708) 719-0447

Status:	Private
Employees:	280
Revenue:	\$ 50,000,000*
Fiscal Year End:	9/30/94

* Company estimate

Key Points

- May & Speh is a direct marketing services and processing/outourcing firm originally established in 1947.
- Recent applications added to the network include:
 - Credit Card Information System
 - Retail Credit Information System
 - Customer Profile Analysis

- Proximity Assignment Selection System

- During 1992, Lawrence Speh was appointed president of the company.

Company Description

May & Speh provides data processing computer outsourcing services in support of direct mail marketing, systems operations and associated support services to clients across industries.

Structure and Operations

May & Speh offers its information management services through two divisions—Direct Marketing Services and Systems Management & Integration.

In addition Chairman Albert Speh and President Lawrence Speh, other May & Speh officers include:

- Terry Cieslak—President, Systems Management & Integration
- Michael Loffler—Senior Vice President, Direct Marketing Services
- Robert Early—Director, Corporate Development
- Kenneth Hachikian—Vice President

Financials

It is estimated that May & Speh's fiscal 1994 revenue was \$50 million, a 19% increase over 1993 revenue of approximately \$42 million.

Approximately 50% of revenue is derived from processing and associated support services for direct marketing applications and 50% from systems operations (outsourcing) and utility processing services.

Industry Markets

May & Speh has outsourcing clients in various industries including telecommunications, manufacturing, finance, business services, insurance, retail, engineering and restaurant management.

Geographic Markets

One hundred percent of May & Speh's revenue is derived from the U.S.

May & Speh has one facility located in Downers Grove (IL).

Key Products and Services

May & Speh's systems operations and utility processing services are supported by its \$60 million data center in Downers Grove.

- The center houses a Hitachi Data Systems' GX system, as well as IBM RS/6000 and Prime midrange systems.
 - More than 120 software programs are available, including DB2 and IDMS-R database management systems; various fourth-generation languages; report writers; data utilities; data library managers; various programming managers; statistical and graphics packages; and packages for a range of user applications, including marketing, manufacturing, retail, medical and financial.
 - May & Speh operates an X.25 telecommunications network supplying clients with remote access from virtually any U.S. location via a local phone call. The data center is configured to support more than 800 telecommunications circuits.
 - Data Center Help Desk, technical staff support, installation, migration, data conversion and training services are also available.
- May & Speh Direct offers the following direct marketing services:
- Direct Mail Services offers personalized printing and labeling, National Change of Address (NCOA), Delivery Sequence File (DSF), NCOA (NIXIE), merge/purge, Zip Code correction and validation, postal presorting and qualification and Zip+4 addition.
 - Database Marketing Services offers support for developing and implementing custom database solutions on all platforms, including DB2, IDMS-R, PC and workstations.
 - Data Enhancement Services provides a detailed profile of the customers' or

prospects' lifestyle characteristics through a large library of compiled data.

- Modeling and Analysis Services aid customers in targeting unique segments, identifying new markets, communicating more effectively and increasing sales to current customers.
- May & Speh is currently providing direct marketing services to more than 500 clients in various industries.

Other services provided by May & Speh include custom software development, volume high-speed printing and data entry.

Marketing and Sales

May & Speh markets its services through a direct sales force.

Competitors

In the direct marketing area, competitors include Epsilon, Donnelley Marketing and Acxiom.

Outsourcing competitors include Genix, EDS, Martin Marietta, Litton Computer Services, Affiliated Computer Services (ACS) and IBM.

COMPANY PROFILE

MAY & SPEH, INC.

1501 Opus Place
Downers Grove, IL 60515-5713
(708) 964-1501

Albert J. Speh, Jr., President
Private Corporation
Total Employees: 240 (12/91)
Total Revenue, Fiscal Year End
12/31/91: \$32,000,000

The Company

May & Speh, Inc., established in 1947, provides data processing computer outsourcing services in support of direct mail marketing, systems operations, and associated support services to clients across industries.

May & Speh's primary competitors in the direct marketing area include Wiland, Epsilon, and Metromail. Outsourcing competitors include Genix, Electronic Data Systems, Martin Marietta, Litton Computer Services, Affiliated Computer Services (ACS), and IBM.

Key Products and Services

Approximately 50% of May & Speh's 1991 revenue was derived from processing and associated support services for direct marketing applications, and 50% was from systems operations (outsourcing) and utility processing services.

May & Speh's systems operations and utility processing services are supported from its \$50 million data center located in Downers Grove.

- The center houses a Hitachi Data Systems' EX/100 system, as well as IBM AS/400 and Prime midrange systems.
- Over 120 software programs are available, including DB2, IDMS-R, and Model 204 data base management systems; various fourth-generation languages; report writers; data utilities; data library managers; various programming languages; statistical and graphics packages; and packages for a range of end-user applications, including marketing, manufacturing, retail, medical, and financial.
- May & Speh operates an X.25 telecommunications network supplying clients with remote access from virtually any U.S. location via a local phone call. The data center is configured to support more than 800 telecommunications circuits.

- May & Speh also provides a range of networking services through an alliance formed with Ameritech Information Systems.
- Data Center Help Desk, technical staff support, installation, migration, data conversion, and training services are also available.
- May & Speh currently has more than 20 outsourcing clients, with contracts ranging from one to five years, and over 50 remote computing clients.

May & Speh Direct offers the following direct marketing services:

- Direct Mail Services offers personalized printing and labeling, NCOA (National Change of Address), DSF (Delivery Sequence File), NCOA (NIXIE), merge/purge, Zip Code correction and validation, postal presorting and qualification, and Zip + 4 addition.
- Database Marketing Services offers support for developing and implementing custom data base solutions on all platforms, including DB2, IDMS-R, Model 204, PC and workstation.
- Data Enhancement Services provides a detailed profile of the customers' or prospects' lifestyle characteristics through a large library of compiled data.
- Modeling and Analysis Services aid customers in targeting unique segments, identifying new markets, communicating more effectively, and increasing sales to current customers.
- May & Speh is currently providing direct marketing services to over 500 clients in various industries.

Other services provided by May & Speh include custom software development, volume high-speed printing, and data entry.

Industry Markets

May & Speh has outsourcing clients in various industries, including telecommunications, manufacturing, finance, business services, engineering, real estate, and restaurant management.

Direct marketing services clients include firms in the retail (including franchising), financial services, consumer products, business services, manufacturing, and telecommunications industries, and resorts.

**Geographic
Markets**

One hundred percent of May & Speh's 1991 revenue was derived from the U.S.

May & Speh has one facility located in Downers Grove (IL).

**Computer
Hardware and
Software**

May & Speh's data center in Downers Grove has the following computers installed in support of its various processing and systems operations services:

- 1 HDS EX/100, MVS/XA, JES2
- 1 IBM AS/400-B50, OS/400
- 1 Prime 9955-II, PRIMOS
- 1 Prime 750, PRIMOS

COMPANY PROFILE

MAY & SPEH, INC.

1501 Opus Place
Downers Grove, IL 60515-5713
(708) 964-1501

Albert J. Speh Jr., President
Private Corporation
Total Employees: 230 (12/89)
Total Revenue, Fiscal Year End
12/31/89: \$30,000,000

The Company

May & Speh, Inc., established in 1947, provides processing services in support of direct mail marketing, systems operations, and associated support services to clients across industries.

May & Speh's 1989 revenue reached \$30 million, an 11% increase over 1988 revenue of \$27 million.

As of December 31, 1989, May & Speh had 230 employees. The company currently has approximately 245 employees.

May & Speh's primary competitors in the direct marketing area include Wiland, Epsilon, and Metromail. Outsourcing competitors include Genix, Electronic Data Systems, Martin Marietta, Litton Computer Services, and Affiliated Computer Systems (ACS).

Key Products and Services

Approximately 50% of May & Speh's 1989 revenue was derived from processing and associated support services for direct marketing applications, 40% from systems operations (outsourcing) services, and the remaining 10% from utility processing.

May & Speh Direct offers the following direct marketing services:

- Direct Mail Services offers a number of mailing programs, including personalized printing and labeling, NCOA (National Change of Address), merge/purge, Zip Code correction and validation, postal presorting and qualification, and Zip + 4 addition.
- Database Management Services aid in the development of a customized database management system, both the technical as well as the practical marketing applications.

- Data Enhancement Services provides a detailed profile of the customers' or prospects' lifestyle characteristics.
- May & Speh is currently providing direct marketing services to over 100 clients in various industries.

May & Speh's systems operations and utility processing services are support from its \$40 million data center located in Downers Grove.

- The center houses a Hitachi Data Systems' EX/100 system (upgraded from an XL80 processor during 1990), as well as IBM AS/400, DEC, and Prime midrange systems.
- Over 120 software programs are available, including DB2, IDMS-R, and Model 204 data base management systems; various fourth-generation languages; report writers; data utilities; data library managers; various programming languages; statistical and graphics packages; as well as packages for a range of end user applications, including marketing, manufacturing, retail, medical, and financial.
- May & Speh operates a X.25 telecommunications network supplying clients remote access from virtually any U.S. location via a local phone call. The data center is configured to support more than 800 telecommunications circuits.
- Data Center Help Desk, technical staff support, installation, migration, data conversion, and training services are also available.
- May & Speh currently has more than 20 outsourcing clients, with contracts ranging from one to five years, and over 50 remote computing clients.

Other services provided by May & Speh include custom software development, volume high-speed printing, and data entry.

Industry Markets

Direct marketing services clients include firms in the retail (including franchising), financial services, consumer products, and business services industries.

May & Speh has outsourcing clients in various industries, including telecommunications, manufacturing, finance, and business services.

**Geographic
Markets**

One hundred percent of May & Speh's 1989 revenue was derived from the U.S.

May & Speh has one facility located in Downers Grove (IL).

**Computer
Hardware and
Software**

May & Speh's data center in Downers Grove has the following computers installed in support of its various processing and systems operations services:

- 1 HDS EX/100, MVS/XA, JES2
- 1 IBM AS/400-B50, OS/400
- 1 DEC 8830, ULTRIX/VMS
- 1 Prime 9955-II, PRIMOS
- 1 Prime 750, PRIMOS

Dropped

COMPANY HIGHLIGHT

MAY & SPEH DATA PROCESSING CENTER INC.
900 Commerce Drive
Oak Brook, Illinois 60521
(312) 325-8060

Albert J. Speh, Jr., President
Wholly owned subsidiary of
Systems Development Corporation
Total company and computer services
sales as of FY ending 6/75:
\$5,500,000

NUMBER OF EMPLOYEES engaged in computer services: 175

KEY PRODUCTS/SERVICES: May and Speh is a batch service bureau. Annual sales are distributed among computer services as follows:

• Batch services	72%
• Facilities management	10%
• Software products	3%
• Software (professional) services	13%
• Remote computing	2%
Total	100%

APPLICATIONS: At least 90% of applications are general business in nature, for example:

- Order entry
- Accounts payable
- Accounts receivable
- Payroll
- Trust accounting

INDUSTRY MARKETS: Manufacturing and retail/wholesale distribution each account for about one-third of annual sales. At 12% of sales, banking is the next largest industry served, followed by medical/hospital at 10% of sales. Government and transportation account for the balance.

GEOGRAPHIC MARKETS: May and Speh operates solely within the North Central region of the U.S., primarily in the Chicago area where its only office is located.

COMPUTER HARDWARE AND SOFTWARE: Mainframe equipment is exclusively IBM as follows:

1	IBM 370/155	DOS	Chicago
2	IBM 360/50s	DOS	Chicago
1	IBM 360/40	DOS	Chicago
1	IBM 360/30	DOS	Chicago

OVERALL ASSESSMENT AND TRENDS: May and Speh has been in operation for over 28 years. Although growth has been moderate, each of these years has been profitable. Continued contracts with two large commercial accounts have aided this position. May and Speh will continue as it has been for the next three years or more with more emphasis on obtaining facilities management contracts at the encouragement of the parent company.

March/1976

H-12.1

INPUT

COMPANY PROFILE

MCCORMACK & DODGE CORPORATION
1225 Worcester Road
Natick, MA 01760
(617) 655-8200

Frank H. Dodge, President
Division of The Dun & Bradstreet Corporation
Total Employees: 1,900
Total Revenue, Fiscal Year End
11/30/88: \$175,000,000*

*INPUT estimate

The Company

McCormack & Dodge Corporation (M&D), formed in 1969 and acquired by Dun & Bradstreet in 1983, develops, markets, and supports software products for financial and human resources applications. The company also offers software tools for application development, micro-to-mainframe links, and report writing.

M&D's fiscal 1988 revenue reached an estimated \$175 million, a 16% increase over estimated fiscal 1987 revenue of \$151 million. A four-year revenue summary follows:

MCCORMACK & DODGE CORPORATION FOUR-YEAR REVENUE SUMMARY* (\$ millions)

ITEM	FISCAL YEAR			
	11/88	11/87	11/86	11/85
Revenue	\$175.0	\$151.0	\$122.0	\$100.0
• Percent increase from previous year	16%	24%	22%	N/A

* INPUT estimates

M&D management attributes revenue growth to strong domestic sales and significant gains in international markets, including Australia and the U.K.

- M&D's annual sales have increased 40 times in ten years.
- Since its acquisition by Dun and Bradstreet in 1983, M&D's revenue has grown on average by more than 25% per year.

The company has operated profitably since inception and achieved record operating income in fiscal 1988.

Recent acquisitions and divestitures made by M&D include the following:

- In January 1989, Andersen Consulting acquired M&D's PIOS and C/PIOS manufacturing resource planning systems. M&D employees who had worked on PIOS development and marketing were offered positions with Andersen Consulting. Terms of the purchase were not disclosed.
 - With an installed base of over 75 sites, the systems are used by a number of large defense contractors.
 - The transaction is part of an agreement between M&D and Andersen Consulting under which the two firms will jointly sell M&D's financial and human resources software and Andersen Consulting's MAC-PAC family of manufacturing software products.
- In January 1989, M&D acquired the assets of The Lawson Group of Tampa (FL). Terms of the purchase were not disclosed.
 - Lawson develops and markets the Resource family of integrated human resource software products for IBM and compatible microcomputers.
 - Lawson has an installed base of approximately 20 customers. Its operations have been merged in M&D's Human Resources Business Unit.
- In March 1988, M&D acquired Neller Software's Austpay Australian payroll/personnel package. Terms of the purchase were not disclosed.
 - Introduced by Neller Software in 1983, Austpay is installed throughout Australia and New Zealand at more than 50 customer sites, including L.M. Ericsson, Mitsubishi Motors, and Air New Guinea. The system runs on IBM, DEC, ICL, and Fujitsu computers.
 - The Austpay business will become part of McCormack & Dodge Australia Pty. Ltd., M&D's Australian operation headquartered in Sydney. All nine former Neller Software employees who worked on Austpay development and

support will join M&D Australia and will work to integrate Austpay with M&D's Millennium execution environment.

- Initial target markets for Austpay are Australia and New Zealand. M&D will consider selling Austpay in other international markets in the future.

In December 1988, M&D signed an agreement with IBM to jointly market M&D financial and human resource applications on all IBM processors.

- Under the agreement, M&D will receive IBM marketing support and may attend IBM user conferences.
- This agreement is the successor to the IBM Industry Marketing Assistance Program pacts and allows IBM to designate M&D as an Authorized Industry Application Specialist.

In early 1988 M&D announced an agreement with GE Information Services whereby M&D will incorporate electronic data interchange (EDI) capabilities into two of its software products.

- Upcoming releases of PO:Millennium (Purchase Order) will allow the users to create EDI-formatted purchase orders directly from within those applications.
- Users will be able to send electronic purchase orders straight into EDI*T, GE Information Services' EDI translation software. Formatted electronic documents can then be transmitted via GE Information Services' EDI*Express network into the EDI mailboxes of their suppliers.

M&D is currently organized into the following business units:

- The Financial Systems Business Unit markets and supports the company's Millennium mainframe financial/accounting software products for IBM and compatible mainframes, the Satellite Series product line, the PLUS line of financial/accounting products for IBM System 36, 38, and AS/400 computers, and PC MinLink, a micro-to-minicomputer link.
- The Human Resources Business Unit markets and supports the Millennium human resource management product line as well as the Lawson products acquired earlier this year.

- The DEC VAX Business Unit develops, markets, and supports the company's Millennium financial/accounting software products for DEC VAX systems.
- The Application Tools Business Unit markets and supports Millennium application tools and its micro-to-mainframe link, Interactive PC Link.
- The Documentation and Training Business Unit provides documentation and customer training, including instructor-led courses and computer-based programs.
- The Consulting Business Unit provides implementation services to M&D's software customers.
- M&D also has foreign subsidiaries in Australia, Belgium, Brazil, Canada, France, Japan, The Netherlands, New Zealand, Saudi Arabia, Singapore, Spain, the U.K., and West Germany.

As of November 30, 1988 M&D had approximately 1,900 employees. The company currently has approximately 1,900 employees.

M&D's primary competitor is Management Science America. Other competitors include Computer Associates International, Cullinet, and Data Design Associates.

Key Products and Services

One hundred percent of M&D's revenue is derived from software products and associated support services. The company has more than 10,000 systems installed worldwide.

- M&D's line of financial information systems represent the largest contribution to revenue.
- The company also markets human resource management software products as well as application development tools.
- A list of the software products marketed by M&D is presented in the exhibit.

EXHIBIT

MCCORMACK & DODGE CORPORATION
SOFTWARE PRODUCTS

Product	Application	Number Installed	Price
Millennium Series			
GL:M	General Ledger	2,800	\$100,000-\$215,000
AR:M	Accounts Receivable	300	\$130,000-\$170,000
AP:M	Accounts Payable	1,800	\$95,000-\$135,000
PO:M	Purchase Order	550	\$95,000-\$135,000
FA:M	Fixed Assets	1,500	\$56,000-\$97,000
CP:M	Capital Project	400	\$47,000-\$51,000
CM:M	Currency Management	50	\$65,000
HR:M	Human Resource Management System		
	- Payroll	400	\$120,000-\$170,000
	- Personnel	400	\$99,000-\$145,000
	- Applicant Flow	-	\$15,000-\$20,000
	- Position Control	-	\$20,000-\$25,000
	- Safety and Health	-	\$15,000-\$20,000
	- Benefits Administration	-	\$50,000-\$75,000
M:SDT	Application development tool	500	\$80,000-\$150,000
M:MRW	Mainframe report writer	300	\$35,000
M:FYI	Memorandum system	150	\$10,000
M:ViewPrint	Report writer	200	\$35,000
Interactive PC Link	Micro-to-mainframe link	950 (mainframe)	\$35,000/mainframe
		7,000 (micro)	\$1,100/micro
Batch Transaction Processor	Batch processor	100	\$30,000-\$40,000
Satellite Series			
AP:Satellite	Accounts Payable	50	\$13,000
GL:Satellite	General Ledger	50	\$13,000
PLUS Products			
A/P PLUS	Accounts Payable	900	\$35,000-\$40,000
G/L PLUS	General Ledger	1,450	\$40,000-\$45,000
PC MinLink	Micro-to-minicomputer link	100	\$4,500
Micro-Based Human Resource Products			
Personnel Resource	Personnel management system	25	\$10,000-\$15,000
Payroll Resource	Payroll management system	25	\$15,000-\$20,000
COBRA Resource	COBRA administrative system	25	\$3,500
Profit Sharing Resource	Defined contribution management system	25	\$25,000
Pension Resource	Defined benefit management system	25	\$25,000

M&D's Millennium Series of products, introduced in 1983, were originally designed for IBM 370, 30xx, and 43xx mainframes running under OS and DOS. The products are available for VSAM and IMS environments. The products are also available for Fujitsu and ICL computers in certain international markets (primarily in Japan, Australia, and the U.K.). At its user conference in August 1988, M&D introduced DEC VAX versions of its Millennium products.

- M&D offers Millennium products for financial/accounting and human resource management applications. Tools for application development, report writing, micro-to-mainframe linking, and office communications are also available.
- In April 1988, M&D announced GL:Millennium 3.0, a newly designed General Ledger Information System that allows users to define key fields and record lengths so that the general ledger data base reflects their own individual reporting and storage needs.
- In April 1988, the company introduced CM:Millennium, a Currency Management System that allows companies to manage their businesses in multiple currencies.
- HR:M, the Millennium Series of Human Resource Management Systems, offers systems for Payroll and Personnel.
 - Optional modules that run with HR:M include Applicant Flow, Position Control, Safety and Health, and Benefits Administration.
 - HR:M systems run on OS, DOS, as well as VS/MVS/VSE operating systems.
 - In March 1988, M&D introduced HR TAX, an automated tax update service that provides customers of HR:M with immediate access to tax updates via a PC-to-PC telecommunications link. HR TAX runs on IBM and compatible microcomputers and is now available to HR:M customers as a part of their maintenance contract.
- M:SDT, M&D's application development tool, works with most major data base management systems, including IMS, VSAM, and DB2. M:SDT is M&D's first product that supports DB2. The company plans to move its full line of applications to DB2.

- In August 1987, M&D announced M:ViewPrint, a cross-application detail report writer that allows users to develop and run reports on-line or in batch.

The Satellite Series of products, announced in August 1987, process data on microcomputers for mainframe consolidation.

- AP:Satellite and GL:Satellite allow users to process accounts payable and general ledger mainframe transactions on IBM and compatible microcomputers, offloading mainframe work functions.
- The products work in conjunction with Interactive PC Link, M&D's micro-to-mainframe link.
- According to M&D management, the Satellite Series is an important step in the company's distributed processing strategy to offer compatible functionality on mainframes, minicomputers, and microcomputers.

The PLUS line of financial/accounting software products are available for IBM System 36, 38 and AS/400 computers. M&D has migrated its DEC-based products to the Millennium environment.

- PLUS products are also available in France on Honeywell Bull computers.
- During 1987 M&D introduced PC MinLink, a micro-to-minicomputer link for the DEC VAX and IBM System 36, 38, AS/400 systems that handles general ledger data.

As a result of the acquisition of The Lawson Group in January 1989, M&D also offers integrated human resource management software products for IBM PC XT/AT, PS/2, and compatible microcomputers running MS-DOS.

- The products also run in a local-area network environment and are written in dBASE III.
- Modules include the following:
 - Personnel Resource is a personnel management system that provides basic recordkeeping, applicant tracking, EEO, and affirmative action reporting.
 - Payroll Resource is a payroll information management system that allows payroll processing, withholding of taxes,

and generation of checks and deposit advices.

- COBRA Resource is an administrative system for compliance with the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA).
- Profit Sharing Resource is a defined contribution and 401k administrative system that features basic recordkeeping, reports of plan activity, unlimited number of accounts (sources of money), and multiple investment funds per account.
- Pension Resource is a defined benefit administrative system that provides basic recordkeeping, reporting, benefit calculations (including normal or early retirement, vested, disability, and death benefits).
- When Lawson products are used with M&D's Interactive PC Link, they will be able to automatically transfer data on-line to HR:M mainframe systems. This distributed processing strategy is targeted to divisions of large companies that prefer to maintain autonomy managing divisional-level information, while allowing headquarters to maintain control of corporate-wide human resource information.

M&D offers its customers support through its field support offices, a toll-free help line, remote diagnostics, and individual product group support. User group meetings are held during the year to offer users further support and to obtain user input on system enhancements.

- Customers receive all system enhancements and full technical support at no charge for a full year after the purchase of an M&D system. Thereafter, M&D provides software maintenance services for its products for an annual fee of approximately 13 1/2% of the current product purchase price.
- The company also offers product training at its Customer Educations Centers located across the U.S. and in M&D offices worldwide.
 - Courses last from three to five days and are staffed by M&D instructors who train customers in both application and data processing aspects of the system.
 - M&D also offers computer-based training programs to help users learn Millennium topics at their own pace.

Industry Markets

M&D's clients are generally large corporations with revenue in excess of \$100 million. Over half of the Fortune 500 companies use one or more of the company's products.

- With the acquisition of the Lawson micro-based products, M&D clients will also include smaller clients and divisions of large corporations.

The manufacturing industry is the company's largest revenue contributor. The company also has customers in the banking, insurance, utilities, health care, education, retail, oil and gas, and real estate markets, as well as state and local governments.

M&D has joint marketing agreements with Avatar Technologies, DEC, IBM, GE Information Services, Aion Corp, and Programmed Intelligence Corp. In addition, the company has joint initiatives with Arthur Andersen, Arthur Young, Coopers & Lybrand, and Price Waterhouse.

Geographic Markets

Approximately 67% of M&D's fiscal 1988 revenue was derived from the U.S. and 33% from international sources.

U.S. regional offices are located in Natick (MA), Atlanta (GA), Schaumburg (IL), Cleveland (OH), Irving (TX), Lakewood (CO), Southfield (MI), Huntsville (AL), Los Angeles and San Mateo (CA), Brookfield (WI), Minneapolis (MN), Teaneck (NJ), Bellevue (WA), and McLean (VA).

M&D Education Centers are located in Atlanta, Huntsville, Natick, Schaumburg, and Los Angeles.

International subsidiaries are located in Australia, Belgium, Brazil, Canada, France, Japan, The Netherlands, New Zealand, Saudi Arabia, Singapore, Spain, the U.K., and West Germany.

M&D distributors are located in Argentina, Denmark, Finland, Hong Kong, Indonesia, Italy, Malaysia, Mexico, Norway, Peru, the Philippines, Singapore, Sweden, Taiwan, Thailand, Turkey, and Venezuela.

Computer Hardware and Software

M&D has a range of computers installed for product development and customer support, including IBM mainframes, minicomputers, and microcomputers, DEC VAX systems, and a NAS 90/60.

COMPANY HIGHLIGHT

**McCORMACK & DODGE
CORPORATION**
560 Hillside Avenue
Needham Heights, MA 02194
(617) 449-4012

James M. McCormack, Chairman
and CEO
Frank Dodge, President
Private Corporation
Total Employees: 350
Total Revenue, Fiscal Year
End 12/31/81: \$26,000,000

THE COMPANY

- McCormack & Dodge Corporation was formed in 1969 when James McCormack and Frank Dodge left IBM to form their own software firm. The company's first product, the Fixed Asset Analysis and Accounting System, was released late in 1969 and was in use by over 200 companies after its first year on the market. McCormack & Dodge now provides financial and accounting applications software packages to over 1,500 corporations worldwide.
- Revenue increased 66% in 1981 to \$26 million from \$15.7 million in 1980. The company has experienced a 97% compounded annual growth rate in revenue from 1977 through 1981. A five-year financial summary follows:

McCORMACK & DODGE
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands)

ITEM	FISCAL YEAR				
	1981	1980	1979	1978	1977
Total revenue	\$26,000	\$15,700	\$ 7,600	\$ 3,150	\$ 1,714
• Percent increase from previous year	66%	107%	141%	84%	41%

- Company growth is due largely to the G/L PLUS package, introduced in 1977.
- Management predicts a 30% to 40% revenue growth rate for 1982, exclusive of new product introductions.
- McCormack & Dodge Canada Ltd. is a subsidiary headquartered in Toronto.
- Major competitors include Management Science America, Inc., Software International Corporation, and University Computing Company.

KEY PRODUCTS AND SERVICES

- One hundred percent of McCormack & Dodge's 1981 revenue was derived from its integrated line of financial and accounting applications software products. Product installations number over 1,900 worldwide.
- McCormack & Dodge packages are written in ANS COBOL and run on most medium and large-scale mainframes (OS or DOS). Products have also been adapted for use on large minicomputers. Software packages are outlined in the exhibit, and include the following:
 - A/P PLUS (Accounts Payable Information System) capabilities include multicorporate and multibank processing, comprehensive cash management, vendor analysis and reporting, invoice processing, check writing, automated remittance procedures and direct distribution, employee travel expense advance preparation, and 1099 and state Use Tax reporting. An on-line module is available.
 - CPA PLUS (Capital Project Analysis System) subsystems provide investment analysis, capital budgeting, ranking of proposed investments, cash flow, discounted cash flow analysis, and project accounting and expenditure control.
 - F/A PLUS (Fixed Asset Analysis and Accounting System) capabilities include multicorporate processing, cash flow maximization, depreciation calculations, short- and long-term depreciation projections, asset control, tax benefit optimization, tax schedule printing, tax processing under ADR, and FASB reporting.
 - G/L PLUS (General Ledger/Financial Analysis System) provides budgeting, modeling, planning, allocation facilities, consolidations, foreign currency conversion, responsibility reporting, graphics, automatic journal processing, sub-ledger and reconciliation accounting, and transaction/exception reporting. An on-line module is available.
 - G/L PLUS-Banking is a version of G/L PLUS incorporating special banking features such as average daily balance calculations and daily yield/rate ratios.
 - P/O PLUS (Purchasing Information System) provides multicorporate processing, an inventory interface, vendor evaluation reporting, long- and short-term cash commitment reporting, and invoice, purchase order, and receipt matching.
 - HiLite, introduced in September 1981, is an ad hoc on-line query system designed to provide instant access to data in a user-defined format for McCormack & Dodge G/L PLUS, A/P PLUS, and F/A PLUS financial packages. The system allows users to create, store, or execute reports on a single master screen.

EXHIBIT
SOFTWARE PRODUCTS
McCORMACK & DODGE CORPORATION

PRODUCT	YEAR OF INTRODUCTION	PRICE	NUMBER INSTALLED	CPU REQUIREMENTS
A/P PLUS, ACCOUNTS PAYABLE INFORMATION SYSTEM	1974	\$20,000-\$37,000	450+	MAINFRAMES IBM 360, 370, 303X, 43XX series Honeywell Level 66 Burroughs 2000-7000 MINICOMPUTERS Hewlett-Packard 3000 IBM System 34
CPA PLUS, CAPITAL PROJECT ANALYSIS SYSTEM	1979	\$15,000-\$20,000	90+	IBM 360, 370, 303X, 43XX series
F/A PLUS, FIXED ASSET ANALYSIS AND ACCOUNTING SYSTEM	1970	\$30,000-\$40,000	750+	IBM 360, 370, 303X, 43XX series Honeywell Level 66 Burroughs 2800 and larger DEC VAX
G/L PLUS, GENERAL LEDGER/FINANCIAL ANALYSIS SYSTEM	1977	\$25,000-\$75,000	525+	MAINFRAMES IBM 360, 370, 303X, 43XX series Honeywell Levels 64, 66 Burroughs 2000-7000 Univac 1100 ICL 1902/1906 ICL 2903-2966 ME 29 ICL 2960-2990 MINICOMPUTERS Burroughs 1700-1900 Hewlett-Packard 3000 IBM System 34, 38 Prime 50 series
G/L PLUS-BANKING, GENERAL LEDGER/FINANCIAL ANALYSIS SYSTEM FOR BANKS	1980	\$50,000-\$75,000	10+	IBM 360, 370, 303X, 43XX series
HILITE, ON-LINE QUERY SYSTEM	1981	\$10,000	NEW	IBM 360, 370, 303X, 43XX series
P/O PLUS, PURCHASING INFORMATION SYSTEM	1980	\$30,000-\$40,000	70+	IBM 360, 370, 303X, 43XX series
H/R PLUS, HUMAN RESOURCE MANAGEMENT SYSTEM	NEW	—	—	—

McCORMACK & DODGE CORPORATION

- Future enhancements, now in research and development, will allow HiLite to interface to user files other than those on McCormack & Dodge systems. Plans also include making the system available on Hewlett-Packard and Prime minicomputers in 1982.
- International versions of A/P PLUS and G/L PLUS, introduced in 1981, are available for foreign and multinational customers.
- McCormack & Dodge plans to introduce its A/R PLUS (accounts receivable) package by mid-1982. The company also has products for micro-based distributed applications processing in research and development.
- On February 25, 1982, McCormack & Dodge acquired Dyatron Corporation's Human Resource Information System (HRIS) business unit for \$4 million. The unit is located in Huntsville (AL) and has 50 employees. McCormack & Dodge will release its version of the HRIS software package on March 16, 1982. Renamed H/R PLUS, the human resource management system is a complete payroll/personnel and employee benefit accounting package.
- In August 1981, non-exclusive rights to the G/L PLUS package were acquired from McCormack & Dodge by Cullinane Database Systems, Inc. Cullinane plans to integrate the package with its IDMS data base management system for marketing in Fall 1982. Cullinane will provide its own product support, training, and documentation, and does not have access to McCormack & Dodge enhancements or maintenance support.

INDUSTRY MARKETS

- Revenue is fairly evenly distributed across industry sectors. Approximately 114 Fortune 500 companies are McCormack & Dodge clients.

GEOGRAPHIC MARKETS

- An estimated 80% of 1981 revenue was derived from the U.S., and 20% from international sources.
- U.S. branch offices are located in Atlanta, Chicago, Dallas, Los Angeles, New York, San Francisco, and Washington D.C.
 - Canadian office locations include Montreal, Vancouver, and Toronto.
- McCormack & Dodge international affiliate and regional offices are in Australia, Columbia, Denmark, Finland, Hong Kong, Ireland, Israel, Italy, the Netherlands, New Zealand, Norway, Singapore, South Africa, Spain, Sweden, the United Kingdom (European headquarters), and Venezuela.
 - Additional regional offices are being established in Latin America and Asia.

COMPUTER HARDWARE AND SOFTWARE

- The company maintains the following equipment at its Needham Heights headquarters:
 - 1 NAS AS/6-7032.
 - 1 HP 3000.
 - 1 Prime 550.
 - 1 Burroughs 1900.
 - 1 IBM System 38.
 - 1 IBM System 34.



COMPANY HIGHLIGHT

**McCORMACK & DODGE
CORPORATION**
560 Hillside Avenue
Needham Heights, MA 02194
(617) 449-4012

Frank Dodge, President
Private Corporation
Total Employees: 300
Total Revenues, Fiscal Year End
12/31/80: \$16,000,000

PRINCIPAL BUSINESS McCormack & Dodge Corporation, established in 1969, provides financial and accounting application software packages to over 1,000 corporations worldwide.

FINANCIALS

	1980	1979	1978 (\$ thousands)	1977	1976
- Total revenues	\$16,000	\$7,600	\$3,150	\$1,714	\$1,217
- Percent increase from previous year	111%	141%	84%	41%	--
-	Company growth is due largely to the G/L PLUS package, introduced in 1977.				

SOURCE OF REVENUE

- 100% Software products.

PRODUCTS AND SERVICES

- Software products (see exhibit).
- McCormack & Dodge packages are written in ANS COBOL and run on most medium and large-scale mainframes (OS or DOS) including IBM, Burroughs, Honeywell, Univac and Hewlett-Packard.
 - The products also run on large minicomputers, including the IBM System 34, Hewlett-Packard 3000 and National CSS 3200.
- Maintenance contracts are available to users for an additional annual fee.
- The company plans to introduce a payroll/personnel system and an accounts receivable package by mid-1982.

INDUSTRY MARKETS Revenues are fairly evenly distributed across industry sectors.

EXHIBIT
SOFTWARE PRODUCTS
McCORMACK & DODGE CORPORATION

PRODUCT	DESCRIPTION	PRICE	NUMBER INSTALLED
A/P PLUS	ACCOUNTS PAYABLE INFORMATION SYSTEM: multicorporate, multibank capabilities, comprehensive cash management, vendor analysis, employee travel expense module, user-defined reporting, Use Tax reporting.	\$27,000—\$34,000	325
A/P PLUS ON-LINE	ON-LINE DATA ENTRY AND INQUIRY	\$15,000	
CPA PLUS	CAPITAL PROJECT ANALYSIS SYSTEM: investment analysis, capital budgeting, cash flow projections, discounted cash flow analysis, project expenditure control.	\$12,500—\$15,000	30+
F/A PLUS	FIXED ASSET ANALYSIS AND ACCOUNTING SYSTEM: maximizes cash flow, depreciation calculations, short- and long-term depreciation projections, optimization of tax benefits.	\$21,500—\$36,000	670+
G/L PLUS	GENERAL LEDGER/FINANCIAL ANALYSIS SYSTEM: budgeting, modeling, planning, allocation facilities, consolidations, foreign currency conversion, responsibility reporting, graphics.	\$47,500—\$61,500	250+
G/L PLUS ON-LINE	ON-LINE DATA ENTRY AND INQUIRY	\$15,000	
G/L PLUS—BANKING	A version of G/L PLUS incorporating special banking features such as average daily balance calculations and daily yield/rate ratios.	\$47,500—\$62,500	NEW
P/O PLUS	PURCHASING INFORMATION SYSTEM: inventory interface, multicorporate capabilities, vendor evaluation reporting, long- and short-term cash commitment reporting.	\$20,000	30

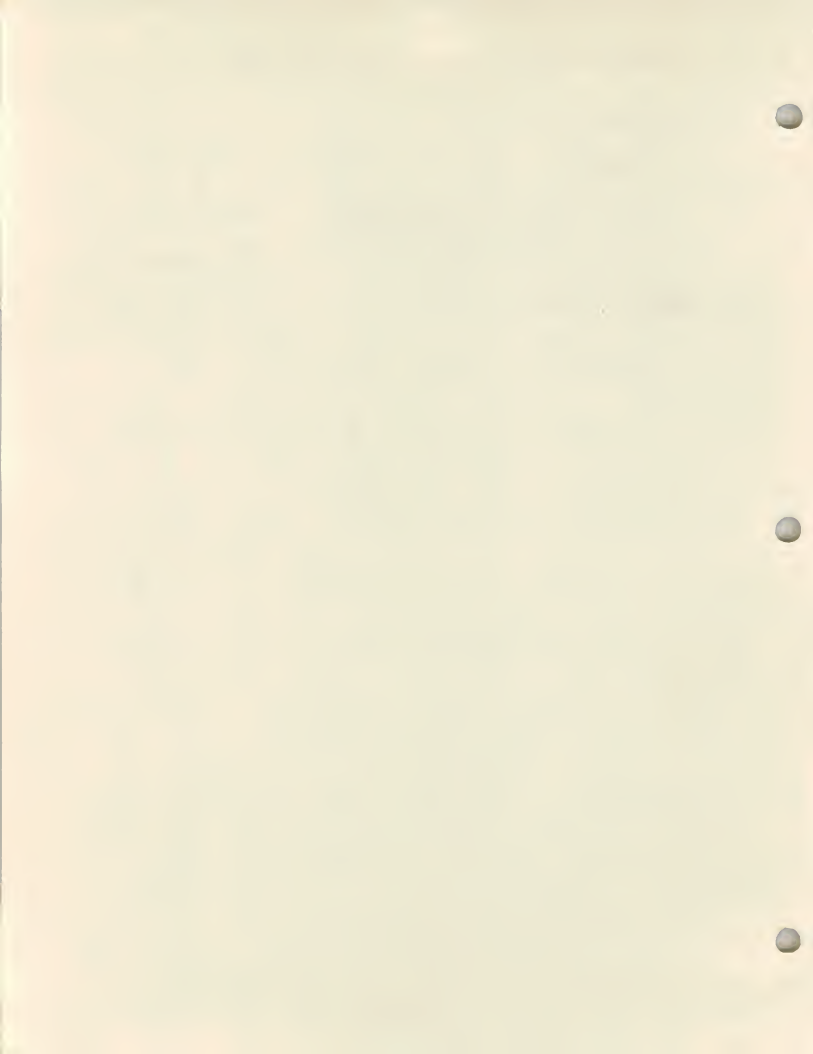
COMPANY HIGHLIGHT/McCORMACK & DODGE CORPORATION

GEOGRAPHIC MARKETS

- United States 90%
- International 10%
- Branch offices are located in Atlanta, Boston, Chicago, Dallas, Los Angeles, New York, San Francisco and Washington, DC.
- McCormack & Dodge has affiliates in Australia, Canada, Italy, Sweden and the United Kingdom.

COMPUTER HARDWARE

- I NAS AS/6-7032.
- I HP 3000.
- I IBM System 34.



COMPANY HIGHLIGHT

MCCORMACK AND DODGE, INC.
381 Elliot Street
Newton, MA 02164
(617) 964-6610

J. M. McCormack, President
Private
Total employees: 67
Total revenues: fiscal year end
12/31/77: \$1,800,000

THE COMPANY

- McCormack and Dodge, Inc., provides packaged software products. The software products, with approximately 830 installations at fiscal year end 1977, are mostly accounting packages.
- Management expects revenues for fiscal 1978 to reach an estimated \$2.75 million, an increase of 53% over fiscal 1977 revenues of \$1.8 million. Revenues for fiscal 1979 are also projected to increase by 50% to an estimated \$4.13 million.
 - Company growth is due largely to its G/L Plus package, first offered in 1977.
 - Management indicates that the company has always been profitable and has expanded entirely through internal growth.
- McCormack and Dodge's 67 employees are distributed as follows:

Marketing/sales	10
General and administrative	10
Computer operations	3
Customer support and software services (including research and development)	44
	—
	67 people

KEY PRODUCTS AND SERVICES

- Software products account for 100% of McCormack and Dodge revenues, as shown in the following table (some of the product names are new):

COMPANY HIGHLIGHT/McCORMACK AND DODGE, INC.

Software Products Offered by McCormack and Dodge

Product Name	Application	No. Installed	Total 1977 Revenues	Price Range
F/A Plus	Fixed asset acctg. (asset depreciation and analysis)	650	35%	\$15,000-\$23,000
A/P Plus	Accounts Payable	153	35	\$18,000-\$20,000
G/L Plus	General Ledger (introduced in August, 1977)	27	30	\$34,500-\$38,500
CIP Plus	Capital budgeting and construction-in-progress (introduced in July, 1978)	3 test users	--	\$12,000
P/O Plus	Purchasing (to be introduced last quarter, 1978)	0	--	Approximately \$18,000
TOTALS		833	100%	

- Maintenance contracts are available to users for an additional \$3,000 per year.
- Users of G/L Plus include Teledyne, Anaconda Aluminum, and Colonial Mortgage Service Company.

APPLICATIONS McCormack and Dodge offers general business applications software products.

INDUSTRY MARKETS Revenues are fairly evenly distributed by industry and are roughly proportional to the population of installed computers.

COMPANY HIGHLIGHT/McCORMACK AND DODGE, INC.

GEOGRAPHIC MARKETS

- All McCormack and Dodge customers are within the United States. Revenues are distributed as follows:

Northeast area (New England and Middle Atlantic states)	30%
Midwest (East North Central and West North Central states)	30
Southeast (South Atlantic and East South Central states)	20
Pacific area (Mountain states and Pacific coast)	<u>20</u>
	100%

- Branch offices are located in Atlanta, GA; Chicago, IL; Phoenix, AZ; and San Diego, CA.

COMPUTER HARDWARE AND SOFTWARE McCormack and Dodge uses an IBM 360/50 running under OS and DOS for software testing only.

COMPANY PROFILE

MCDONNELL DOUGLAS INFORMATION SYSTEMS COMPANY

P.O. Box 516
St. Louis, MO 63166
(314) 232-0232

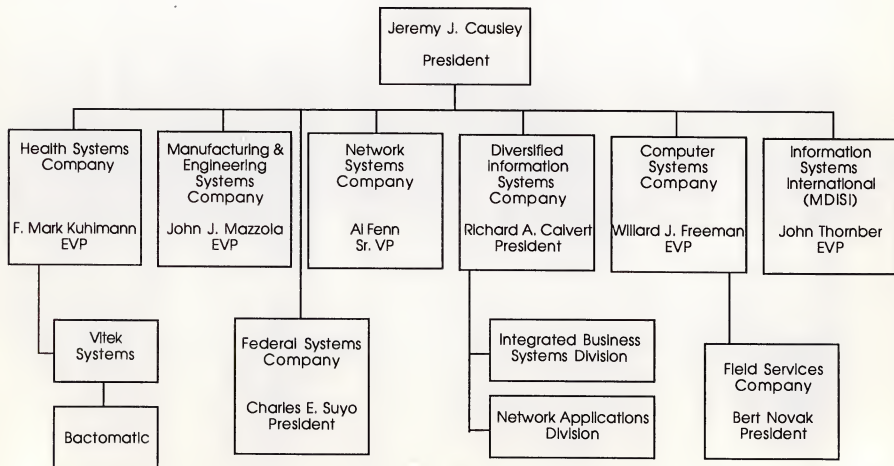
Jeremy J. Causley, President
Operating Company of McDonnell
Douglas Corporation
Total Employees: 11,000
Total Revenue, Fiscal Year End
12/31/87: \$1,241,800,000
Information Services Revenue:
\$1,100,000,000

The Company

McDonnell Douglas Information Systems Company (formerly McDonnell Douglas Information Systems Group) offers remote computing/network services, software products, professional services, and turnkey systems to over 250,000 government and commercial clients worldwide. The company also manufactures and markets minicomputers and provides maintenance services.

- McDonnell Douglas Information Systems Group was created in April 1984 with the consolidation of three of McDonnell Douglas Corporation's divisions (McDonnell Douglas Automation Company, Microdata Corporation, and Vitek Systems, Inc.) with the newly acquired Tymshare, Inc.
- Since 1985, the group has undergone several reorganizations and has divested certain businesses. The current organization, renamed McDonnell Douglas Information Systems Company in early 1988, offers industry-specific solutions to the federal government and the manufacturing, health care, insurance, retail, and telecommunications industries, as well as cross-industry products and services, including application development tools; consulting, education, and systems development professional services; remote computing (utility processing) services; and network applications services for electronic mail and electronic data interchange (EDI).
- Information Systems Company conducts its operations through seven primary business units, as shown in the exhibit.

EXHIBIT A

McDonnell Douglas Information Systems Company
Organization Chart

Information Systems Company revenue for 1987 reached \$1,242 million, a 4% increase over 1986 revenue of \$1,190 million. Operating losses were \$42.3 million, compared to losses of \$69.7 million in 1986. A five-year financial summary follows:

**MCDONNELL DOUGLAS INFORMATION SYSTEMS COMPANY
FIVE-YEAR FINANCIAL SUMMARY
(\$ millions)**

ITEM	FISCAL YEAR				
	1987	1986	1985	1984	1983
Revenue	\$1,242.8	\$1,189.8	\$1,104.5	\$888.1	\$557.3
• Percent change from previous year	4%	8%	24%	59%	15%
Operating (loss)	\$(42.3)	\$(69.7)	\$(109.3)	\$(45.3)	\$(18.9)
• Percent change from previous year	39%	36%	(141%)	(140%)	(656%)

McDonnell Douglas management attributes Information Services Company's losses to the following:

- 1987 earnings were adversely affected by \$36 million in write-offs of investments in businesses no longer considered strategic.
- Sales in several product lines were lower than anticipated, and an unexpectedly high percentage of total revenue came from sales of relatively low margin products and services.
- Losses in 1987 and 1986 also include charges of \$53.2 million and \$87.9 million, respectively, related to the amortization of acquisition costs.
- Losses in 1987 were partially offset by a \$44.3 million gain from the sale of several investments, including partial ownership in a health maintenance organization and a French computer services firm.
- Corrective action begun in the fourth quarter included a reduction of approximately 4% in the information services workforce, elimination of some product lines, and selective reorganization of some businesses.

Divestitures made by the Information Services Company include the following:

- In March 1988 the company sold the Physicians Systems Company (PSC) unit of McDonnell Douglas Health Systems Company to certain PSC management.
 - PSC was formed in 1984 with the acquisition of Science Dynamics Corporation of Torrance (CA) and provided processing services and turnkey systems to medical clinics and physicians, health maintenance organizations, and medical schools.
- In January 1986 Dynatax, the company's income tax processing services business, was sold to Interactive Financial Services, Inc. of Atlanta (GA). In January 1987 Unitax, a provider of income tax processing, software, and associated tax planning services, was also sold to Interactive Financial Services. Terms of the sales were not disclosed.
- In 1986 FTCC McDonnell Douglas International Telecommunications Company, an international provider of voice and data communications services, was sold to a unit of Pacific Telecom.
- In 1986 McDonnell Douglas Travel Management Systems Company, a provider of software and processing services to travel agents, was sold.
- In December 1987 McDonnell Douglas Banking Systems Company, a provider of retail banking software products, was sold to Information Technology Inc.

In December 1987 the company acquired PRO-IV, a fourth-generation language, as part of the acquisition of Pro Computer Sciences, Inc. of Laguna Hills (CA). The product is marketed through the Integrated Business Systems Division of the Diversified Information Systems Company unit.

Information Systems Company is currently organized into seven primary business units, as follows:

- McDonnell Douglas Health Systems Company, headquartered in St. Louis (MO), provides turnkey systems, processing services, and associated professional services to hospitals.
 - The Vitek Systems and Bactomatic business units provide laboratory diagnostic systems to the medical and industrial labs industries.
- McDonnell Douglas Manufacturing & Engineering Systems

Company, headquartered in St. Louis, markets and supports the UNIGRAPHICS[®] computer-aided engineering, design, and manufacturing product line and related products for the computer-integrated manufacturing marketplace.

- McDonnell Douglas Network Systems Company, headquartered in San Jose (CA) operates the TYMNET[®] public packet data communications network and provides private networks to both U.S. and international markets.
- McDonnell Douglas Diversified Information Systems Company, headquartered in St. Louis, provides products and services to various industry sectors as follows:
 - The Integrated Business Systems Division provides software products, remote computing services, and professional services primarily to the communications, insurance, and manufacturing industries. Cross-industry products and services are also provided.
 - The Network Applications Division provides value-added network services, including electronic mail, electronic data interchange, and credit card and check authorization services. This division, established in early 1988, combines the Information Systems Company's Applied Communications Systems Company (EDI, OnTyme, and other electronic messaging services), TeleCheck[®] (check authorization), and Payment Systems (credit card authorization) units.
- McDonnell Douglas Federal Information Systems, formed in 1987 and headquartered in St. Louis (MO), performs large professional services projects for the federal government.
- McDonnell Douglas Computer Systems Company, headquartered in Irvine (CA), manufactures and supports PICK-based minicomputers and provides software products.
 - McDonnell Douglas Field Service Company provides repair and maintenance services for a range of computers, peripherals, and communications networks.
- McDonnell Douglas Information Systems International (MDISI), headquartered in Hemel Hempstead (U.K.), markets and supports the Information Systems Company's products and services outside the U.S. and Canada.

A two-year summary of revenue contribution from each of

Information Systems Company's business units is estimated as follows:

**MCDONNELL DOUGLAS INFORMATION SYSTEMS COMPANY
TWO-YEAR SOURCE OF REVENUE SUMMARY
(\$ millions)**

BUSINESS UNIT	FISCAL YEAR	
	1987	1986
Health Systems	\$246	\$250
Manufacturing & Engineering Systems	159	158
Network Systems	187	165
Diversified Systems	250	276
Computer Systems	216	206
MDISI	316	247
(Eliminations)	(132)	(112)
TOTAL	\$1,242	\$1,190

The Information Systems Company has approximately 11,000 employees, segmented as follows:

Health Systems	1,900
Federal Information Systems	400
Manufacturing & Engineering Systems	800
Network Systems	1,100
Diversified Information Systems	2,700
Computer Systems	2,200
MDISI	<u>2,600</u>
	11,700

Information Systems Company's primary competitors, by business area, include the following:

- Health services competitors include HBO & Company, Shared Medical Systems, and TDS Health Care Systems.
- Federal government professional services competitors include Computer Sciences Corporation, Electronic Data Systems, Boeing Computer Services, and Martin Marietta Data Systems.
- UNIGRAPHICS competitors include IBM, Calma (General Electric), Intergraph, Applicon (Schlumberger), and Prime.

- Value-added network competitors fall into two categories as follows:
 - Other value-added network providers: Telenet, CompuServe, Computer Sciences Corporation, GE Information Services, and IBM Information Network.
 - Other packet-switch equipment vendors (private networks): Bolt Beranek and Newman, Telenet, and Northern Telecom.
- Diversified services competitors, by product/service area include the following:
 - Telephone industry: Boeing Computer Services, GE Information Services, Electronic Data Systems, and Cincinnati Bell.
 - Insurance industry: Electronic Data Systems and Policy Management Systems Corporation.
 - TeleCheck: Telecredit.
 - Credit card authorizations; National Data Corporation.
 - Electronic data interchange: Sterling Software, Inc. (ORDERNET) and GE Information Services.

Key Products and Services

Approximately 85% (\$1,056 million) of Information Systems Company's 1987 revenue was derived from information services and 15% (\$185 million) was derived from computer sales and service. A further breakdown of information services revenue follows:

Processing services	50%
- Remote computing (27%)	
- Network services (23%)	
Software products	9%
Professional services	17%
Turnkey systems	<u>24%</u>
	100%

The Health Systems Company contributed an estimated \$246 million to 1987 revenue, a 2% decrease from 1986 revenue of \$250 million. Approximately 60% of revenue is derived from turnkey systems and 40% from processing services. The company claims that one out of every four hospitals in the U.S. uses one or more of its systems.

- The Integrated Hospital System (IHS) is a turnkey hospital management system that operates on DEC VAX, IBM mainframes, or Tandem minicomputers.
 - During 1987 the IHS client base increased by 76%.
 - Software modules available include Financial Management (General Accounting and Corporate Reporting), Patient Management (Patient Communications, Patient Administration, and Patient Accounting), Ancillary Management (Nurse Management, Medical Staff, and Pharmacy), Resource Management (Material and Asset Management and Human Resources), and Administrative Management (PC Communications, System Security, and Query/Ad Hoc Reporting).
 - IHS is targeted to large hospitals. Approximately 90 hospitals currently use IHS.
- The Mini-based Hospital System (MHS), introduced in 1980, is a turnkey hospital financial system developed by Management Systems Associates.
 - MHS runs on Microdata minicomputers and provides applications for Patient Registration and Control, Patient Management Systems, Medical Records Systems, General Accounting Systems, Materials Management Systems, and word processing, spreadsheet, and microcomputer interfaces.
 - MHS is targeted to smaller hospitals. There are currently over 90 MHS installations.
- The Patient Care System (PCS) is a Tandem-based turnkey

system that manages all patient information activities, including patient admissions and registrations, test and procedure ordering, result reporting, historical recordkeeping, and nursing treatments. There are currently over 30 PCS installations.

- RadCom is a DEC VAX-based turnkey system for radiology department information management.
- PathCom is a DEC VAX-based laboratory data management turnkey system.
- RxCom is a DEC VAX-based pharmacy management turnkey system.
- Health Systems Company also markets three proprietary IBM microcomputer-based departmental systems: The Medical Records Management System, The Materiel Management System, and The Food Management System.
- Health Systems Company is the exclusive distributor of two Atwork, Inc. MS-DOS-based microcomputer turnkey products: The Nurse Management System and The Operating Room Management System.
- The Hospital Financial Control (HFC) system, introduced in 1970, is the Health Systems Company's distributed processing service currently used by 467 hospital clients nationwide.
- Applications supported include the following:
 - Financial Management: Executive Operating Summary, Advanced Management Reporting System, and General Ledger.
 - Patient Management: Registration Control, Medical Records, Third Party Billing, and Accounts Receivable.
 - Human Resource Management: Payroll, Personnel, Benefit Accurals, and Labor Management.
 - Statistical Management: Case Mix Management, Cost Accounting, and Financial/Statistical History.
 - Asset Management: Fixed Assets, Preventative Maintenance, Enhanced Payables, and Materiel Management.
- Data is transmitted via on-line terminals or microcomputers

from the hospital to Health Systems Company's data center in St. Louis.

- The Hospital Data Communication (HDC+) system provides admitting and order entry functions for HFC customers via a DEC VAX front end processor.
- The Healthcare Communications Service provides professional services consulting in the area of hospital communications. Services include planning, system design, vendor evaluation, and project implementation.

The Manufacturing & Engineering Systems Company markets and supports mechanical computer aided engineering, design, and manufacturing (CAE/CAD/CAM) turnkey systems and software products.

- The unit's 1987 revenue reached \$159 million, compared to 1986 revenue of \$158 million. The UNIGRAPHICS product line generated domestic revenue of \$107 million and international sales of \$41 million in 1987, compared to domestic revenue of \$92 million and international revenue of \$33 million in 1986.
- UNIGRAPHICS is an interactive, three-dimensional graphics system targeted to the mechanical manufacturing marketplace.
 - Applications available for use with UNIGRAPHICS include solid modeling, sheet metal fabrication, printed circuit board design, finite element modeling, mechanism linkage design, graphics machining, simulation, robotics, plant communications systems, numerical control tape preparation, and quality assurance.
 - UNIGRAPHICS software runs on DEC VAX series and Data General MV series computers, and workstations from DEC and Tektronix. In March 1988 UNIGRAPHICS was made available on the new UNIX workstations from Hewlett Packard.
 - In March 1988 it was announced that DEC had purchased its 500th UNIGRAPHICS license from McDonnell Douglas. DEC has UNIGRAPHICS installed at 75 sites, located in 10 states, and 13 foreign countries.
 - In April 1988 McDonnell Douglas Corporation installed its 540th UNIGRAPHICS license.

- In March 1988 Information Systems Company signed a joint product integration/marketing agreement with CimTelligence Corporation. UNIGRAPHICS will be integrated with CimTelligence IntelliCapp computer-aided process planning software and IntelliGen generative process planning system.
- In December 1987 McDonnell Douglas was selected as a strategic partner by General Motors to help develop and implement a plan to standardize and increase the effectiveness of the CAD/CAM/CAE systems and operations at General Motors. The Manufacturing and Engineering Systems Company was chosen as a member of a team in conjunction with Electronic Data Systems and CADAM, Inc.
- The company also markets the following products:
 - UNIGRAPHICS II Access software allows a standard IBM microcomputer to be used as a host dependent UNIGRAPHICS design station.
 - VALISYS™, introduced in November 1987, is a quality assurance and quality control software product line that is fully integrated with UNIGRAPHICS.
- The company's non-CAD/CAM manufacturing application software products are now marketed and supported by the Information Systems Company's Integrated Business Systems unit.

McDonnell Douglas Network Systems Company sells public data network communications services and private data network systems. This unit contributed about \$187 million to 1987 revenue, a 13% increase over \$165 million in 1986.

- TYMNET is McDonnell Douglas' public packet data communications network. Based on intelligent communications processors connected by a network of leased telephone lines, microwave links, and satellite channels, TYMNET provides users with low-cost access to host computer applications from terminals and microcomputers worldwide. TYMNET provides value-added services such as error protection, protocol conversion, and data security.
- Since its introduction in 1969, the network has had an annual growth rate approaching 30%. The number of companies supported has grown from 30 in 1972 to over 1,300 today.

- Local dial-up access is available from over 780 locations in the U.S., and from some 70 foreign locations. There are currently over 12,000 local access ports.
- Over 3,000 communications processors support the network.
- TYMNET supports the Information Systems Group's Network Applications Division (EDI, TeleCheck, credit card authorizations, and electronic messaging).
- Over the past year, the company has made several significant product and service announcements, as follows:
 - Direct connections with international VANs (bypassing the international record carriers).
 - Third party agreements to sell private line expanders, data switches, and T-1 multiplexors.
 - Public network services, such as X.25-to-SDLC Service.
 - The Turbo Engine[®], which is built on an open architecture, allowing for compatibility and ease of development programming with a range of vendors products.
- Network Systems Company is also a supplier of private data networks, having provided custom networks to government agencies, financial institutions, and other large corporations.
- Contracts include The Immigration and Naturalization Service, S.C. Johnson, Chase Manhattan Bank, and various foreign PTTs.

McDonnell Douglas Diversified Information Systems Company contributed approximately \$250 million to 1987 revenue, compared to 1986 revenue of \$276 million.

- The Integrated Business Systems Division provides software products, remote computing services, and professional services primarily to the communications, insurance, and manufacturing industries. Cross-industry products and services are also provided.
- The division has data centers in St. Louis, Dallas, and Fremont (CA).
- The company provides services to telephone companies.

Major clients include AT&T, the Bell operating companies, and various independents.

- Insurance applications include group and property claims processing and reporting, patient service records, Medicare claims processing, and workmen's compensation.
 - Clients include the major Blue Cross and Blue Shield companies and many smaller independent health and property and casualty insurance companies.
- Manufacturing applications are available for time and attendance, work order tracking, labor reporting, shop floor graphics, distributed numerical control with linkages to material requirements planning, plant maintenance and distribution.
 - GDS is CAD/CAE software that supports architectural design and drafting, civil engineering, structural engineering, and mapping applications. The product line contributed about \$25 million to 1987 revenue, compared to \$30 million in 1986.
 - Other manufacturing software products contributed revenue of \$16 million in 1987, compared to \$21 million in 1986.
- Cross-industry products and services include:
 - Application development tools such as PRO-IV, a fourth generation language, STRADIS^R, a fourth-generation systems development tool, and ProKit*WORKBENCHTM, a microcomputer-based computer-aided software engineering tool.
 - Remote computing services, as well as utility processing.
 - Professional services, including consulting, custom programming and systems design.
- Recent processing agreements announced by McDonnell Douglas include:

In September 1987, a three-year processing agreement to provide IBM-based services to Sterling Chemicals of Houston.

 - The Network Applications Systems Division provides value-

added network services, including electronic mail, electronic data interchange, and credit card and check authorization services.

- Credit card and check authorization services contributed an estimated \$85 million to 1987 revenue, up 20% from \$71 million in 1986.
 - Credit card authorization services are available 24 hours a day, seven days a week via local call access to TYMNET.
 - In early 1988 entered into an agreement with Digital Radio Networks Inc. (DNR) of Vienna (VA) to market and conduct a pilot program of DNR's radio-based telecommunications network that provides credit card authorization for POS transactions. The service will be tested in merchant locations in California and on the East Coast.
 - TeleCheck, the company's check authorization service, is available to a range of merchants, such as department, grocery, and clothing stores; hotels; financial institutions; airlines; and automobile dealerships, from more than 97,000 locations nationwide. Approximately 140 million authorizations are made daily.
- EDI services contributed an estimated \$7 million to Information Systems Company's 1987 revenue. The principal EDI service, EDI*Net[®], was formally introduced in 1983, although the company has provided logistics data interchange services since 1981. EDI*Net supports mailbox and outdial services, using TDCC, X12, International GTDI, and UCS standards.
 - Clients are predominantly in the transportation, grocery, electronics, telecommunications, aerospace, oil, and warehousing industries.
 - No-log in service is provided in accordance with UCS (grocery) standards. This permits non-customers to access EDI*Net customers who are trading partners through the network.
 - Approximately 600 companies use the company's EDI services as subscribers, and additional users access the service through the no-log in service.

- Logistics data interchange (LDI) services include:
 - MDC-Trace, which traces motor and air carrier shipments, permits carrier performance analysis, improved inventory control, and assistance in expediting shipments.
 - Data Collection, which provides air, rail, and motor shipment status messages, allows users to collect inbound and outbound shipment status messages from carriers.
- OrderXchange is a remote entry management and sales communications system.
- OnTyme[®], the company's electronic messaging service, is available via TYMNET. MicroMail[™] works in conjunction with OnTyme to simplify sending and receiving messages by eliminating access codes. In July 1987 the U.S. Army Corps of Engineers purchased 1,000 copies of MicroMail for use in its divisional, district, and field offices.
- In January 1988 it was announced that Douglas Aircraft Company will use OnTyme and EDI*Net to communicate electronically with its suppliers for parts procurement and inventory management for its production facilities.

McDonnell Douglas Computer Systems Company markets three major computer lines: the Series 6000, ranging from \$25,000 to \$100,000 per system; the Series 9200, ranging from \$90,000 to \$500,000 per system; and the Series 18, ranging from \$400,000 to \$1 million per system.

- The company also markets certain proprietary software products, including ALL, a fourth generation language, and Results, a distribution industry applications package.
- Most other vertical application software marketed by this unit is generally developed by outside software vendors and sold under various exclusive or non-exclusive agreements.

Industry Markets

Information Services Company derives its revenue primarily from the health care, manufacturing, retail, and telecommunications industries. 1987 revenue was derived approximately as follows:

Health care	23%
Manufacturing	16%
Retail	10%
Telephone	6%
Insurance	2%
Architecture, engineering, and construction	2%
Distribution	2%
Federal government	2%
Other government	2%
Cross industry	<u>35%</u>
	100%

**Geographic
Markets**

Approximately 75% of Information Systems Company's 1987 revenue was derived from the U.S. and 25% was derived from international sources.

- The company maintains approximately 600 offices worldwide.

**Computer
Hardware and
Software**

Primary data centers are located in St. Louis, Dallas, and Fremont (CA). Computers from various manufacturers, including IBM, DEC, and Control Data, are installed.

FINANCIAL UPDATE TO PROFILE DATED NOVEMBER 1982

MCDONNELL DOUGLAS INFORMATION SYSTEMS GROUP

P.O. Box 516
St. Louis, MO 63166
(314) 232-0232

Robert A. Fischer, Executive Officer
Operating Group of McDonnell Douglas
Corporation
Total Employees (Noncaptive): 14,700
Total Revenue, Fiscal Year End
12/31/84: \$1,117,000,000
Noncaptive Revenue: \$888,100,000

THE COMPANY

- The McDonnell Douglas Information Systems Group (ISG) was created in April 1984 with the consolidation of three of McDonnell Douglas Corporation's divisions: McDonnell Douglas Automation Company (McAuto), Microdata Corporation, and Vitek Systems, Inc., with the newly acquired Tymshare, Inc. subsidiary. In early 1985 ISG announced a complete reorganization of its operations and the formation of 23 operating group companies. A summary of the group's current structure is shown in the exhibit.
- McDonnell Douglas management has established the following primary goals for ISG:
 - To become a large, competitive, "growth" business for McDonnell Douglas in the 1990s, complementing the military and commercial aerospace businesses.
 - To be at least a \$4 billion revenue business in 1990 with net earnings of at least \$275 million.
 - To operate at least five largely autonomous vertical businesses, each serving a focused group of customers (health care, discrete manufacturing, financial services, wholesale/retail distribution, and telephone companies) and each contributing from \$0.5 billion to \$1.5 billion in revenue.
 - To operate major "horizontal" businesses, selling products or services across all industry sectors, both inside ISG and to outside customers.
 - To operate several significant resource organizations providing products, services, or support to ISG's vertical and horizontal businesses.
- ISG's 1984 noncaptive (commercial) revenue reached \$888.1 million, a 59% increase over 1983 revenue of \$557.3 million; however, if 1984 revenues of Tymshare and other acquisitions were excluded, the 1984 increase would be

approximately 14%. In the three-year summary that follows, ISG financials for 1983 and 1982 have been reclassified for comparison purposes, and the results of acquired companies have been included from their respective dates of acquisition.

MCDONNELL DOUGLAS INFORMATION SYSTEMS GROUP
THREE-YEAR FINANCIAL SUMMARY
(\$ millions)

ITEM \ FISCAL YEAR	1984	1983	1982
Noncaptive revenue	\$ 888.1	\$ 557.3	\$ 483.0
• Percent increase from previous year	59%	15%	N/A
(Loss) from operations	\$ (45.3)(a)	\$ (18.9)	(2.5)
• Percent change from previous year	(140%)	(656%)	N/A

- (a) The 1984 loss from operations includes a charge of \$47.2 million for amortization resulting from the revaluation of assets purchased in 1984 in the Tymshare, Computer Sharing Services, and Science Dynamics acquisitions.

- In late 1983 McDonnell Douglas management committed the corporation to aggressive growth in the information services industry. As a part of this strategy, the company has made the following acquisitions:

- In January 1984 McDonnell Douglas purchased Computer Sharing Services, Inc. for \$69.2 million in cash.
 - Computer Sharing Services provided processing services primarily to the telecommunications industry. The company had fiscal 1983 revenue of approximately \$27 million and 275 employees at the time of the acquisition.
 - Computer Sharing Services' operations have been merged with the telephone businesses of McAuto and Tymshare to form McDonnell Douglas Communications Industry Systems Company.
- On March 30, 1984, McDonnell Douglas finalized the acquisition of Tymshare, Inc. for an aggregate cost of approximately \$312.7 million. The acquisition was accounted for as a purchase.
 - Tymshare operated Tymnet, a data communications network that serves 50 countries and over 500 U.S. cities. Other services provided by Tymshare include TeleCheck, a check verification service to retailers; a credit card authorization service; Electronic Data Interchange, a service for manufacturers, brokers,

- wholesalers, and retailers; and computer-based financial, banking, and tax preparation services.
- Tymshare had revenue of approximately \$297 million and net losses of \$1.6 million in 1983. The company had approximately 3,500 employees at the time of the acquisition.
- Tymshare's operations have been merged into various operating group companies established by ISG during 1985, as shown in the exhibit.
- In January 1985 McDonnell Douglas announced it would purchase all the shares of Tymshare UK owned by Unilever, making McDonnell Douglas the sole owner of the British subsidiary of Tymshare, Inc. Terms of the acquisition were not disclosed.
 - The subsidiary provides turnkey systems, software, and consulting services to users in international banking, hotels, pharmaceutical companies, expert systems, and project management.
- In December 1984 McDonnell Douglas acquired Science Dynamics Corporation of Torrance (CA). Terms of the acquisition were not disclosed.
 - Science Dynamics provides processing services and turnkey systems to medical clinics and physicians, health maintenance organizations, and medical schools.
 - Science Dynamics had revenue of approximately \$18 million for the fiscal year end January 31, 1984 and had approximately 175 employees at the time of the acquisition.
 - Science Dynamics now operates as McDonnell Douglas Physician Systems Company (formerly Physician Systems, Inc.).
- In April 1985 McDonnell Douglas acquired Applied Research of Cambridge Ltd. (ARC) for \$12.5 million.
 - ARC specializes in turnkey computer-aided design (CAD) systems sold primarily to the architectural, engineering, and construction industries. It also supplies digital mapping systems to governments and utility companies.
 - McAuto has marketed ARC's CAD systems in the U.S. since 1981. Sales of ARC systems by McAuto reached \$9.2 million in 1984 and are expected to more than double during 1985.
 - ARC had total revenue of approximately \$12 million in 1984 and 110 employees at the time of the acquisition.

EXHIBIT
McDONNELL DOUGLAS INFORMATION SYSTEMS GROUP COMPANIES

COMPANY NAME	FORMER NAME	BUSINESS THRUST
McDonnell Douglas Computer Systems Company	Microdata	Business computer systems, distributed systems, workstations, software
McDonnell Douglas Network Systems Company	Tymnet (Tymshare)	Public data communications services and private data communications systems
McDonnell Douglas Field Service Company	Field service operations of Microdata, Tymnet, and Tymshare	Maintenance of computer systems and peripherals, communications equipment, terminals and PCs
McDonnell Douglas Information Systems International	International operations of McAuto, Microdata, and Tymshare	Exclusive distributor of McDonnell Douglas Information Systems Group products outside of the United States and Canada
McDonnell Douglas Health Systems Company	McDonnell Douglas Health Systems Company (MDHS)	Includes the following three companies
— McDonnell Douglas Physician Systems Company	Physician Systems, Inc. (MDHS) (formerly Science Dynamics)	Medical data processing systems and services to physician groups, clinics, HMOs and schools
— McDonnell Douglas Health Information Systems Company	Health Services Division (MDHS)	Data processing services and turnkey systems to health care industry
— Vitek Systems-McDonnell Douglas Health Systems Company	Vitek Systems, Inc. (MDHS)	Automated microbiological system (turnkey)
McDonnell Douglas Manufacturing Industry Systems Company	Cimtek (McAuto)	Turnkey systems for engineering design and manufacturing operations for the discrete manufacturing industry
McDonnell Douglas Communications Industry Systems Company	McDonnell Douglas Communications Systems and Services (McAuto)	Integrated data processing solutions for communications industry companies
McDonnell Douglas Applied Communications Systems Company	Applied Communications Systems (McAuto)	Application of the latest data communications technology to business problems
McDonnell Douglas Architectural, Engineering and Construction Information Systems Company	Engineering Services (McAuto)	Three-dimensional modeling, design and drafting systems (turnkey), structural analysis, project management

Continued

McDONNELL DOUGLAS INFORMATION SYSTEMS GROUP

EXHIBIT (Cont.)
MCDONNELL DOUGLAS INFORMATION SYSTEMS GROUP COMPANIES

COMPANY NAME	FORMER NAME	BUSINESS THRUST
McDonnell Douglas Distribution Information Systems Company	Distribution Services (McAuto)	Products and services for the distribution and transportation functions of major manufacturers and distributors
McDonnell Douglas Electronic Data Interchange Company	EDI Services (McAuto)	Computer-to-computer electronic interchange of business documents between companies
McDonnell Douglas Finance and Insurance Information Systems Company	Financial/Insurance Services (McAuto)	Claims processing, financial analysis, and other products and services for the financial and insurance industry
McDonnell Douglas Professional Services Company	Professional Services of McAuto	Consulting, analysis, design and development of data processing applications; development aids; training
McDonnell Douglas Remote Computing Services Company	Processing Services of McAuto and Tymshare	Provides IBM and CDC host resources (remote processing and timesharing)
McDonnell Douglas Payment Systems Company	Payment Services Division (Tymshare) and Telecheck Services, Inc. (Tymshare)	Digital authorization and electronic draft capture at point-of-sale; check acceptance and guarantee services
McDonnell Douglas Banking Systems Company	Banking Systems Division (Tymshare)	Retail banking software
McDonnell Douglas International Banking and Investment Systems Company	International Banking and Investment Systems Division (Tymshare)	Automated, integrated systems to support international trading activity (turnkey or remote processing)
Dynatax-McDonnell Douglas Information Systems Group	Professional Services Division (Tymshare)	Income tax processing services
Unitax-McDonnell Douglas Information Systems Group	Unitax Division (Tymshare)	Income tax processing services; tax preparation software; tax planning; financial planning
McDonnell Douglas Travel Management Systems Company	Travel Management Services (Tymshare)	Accounting software and processing for travel agents

MCDONNELL DOUGLAS INFORMATION SYSTEMS GROUP

- ARC now operates as a wholly owned subsidiary.
- ISG's noncaptive revenue for the six months ending June 30, 1985 reached \$532.5 million, compared to \$390.6 million for the same period in 1984. Losses from operations were \$41.1 million compared to losses of \$18.5 million for the same period a year ago.
 - Increased revenue was attributed to the fact that Tymshare, acquired in March 1984, was not included in ISG's results for the first quarter of 1984. Revenue growth for the second quarter of 1985 was less than 10%.
 - ISG management attributes increased losses to less than expected revenue growth in the second quarter, reflecting generally adverse conditions affecting the information services industry.
- ISG currently provides remote computing services, value-added network services, software products, professional services, and turnkey systems to over 4,500 commercial clients worldwide. The company also manufactures and markets Microdata minicomputers and intelligent terminals.
- As of December 31, 1984, ISG had approximately 14,700 noncaptive employees. There are currently approximately 14,200 noncaptive ISG employees.
- ISG's primary competitors by business area, include the following:
 - Health services competitors include HBO & Company, Shared Medical Systems, and Technicon Medical Information Systems.
 - CAD/CAM competitors include IBM, Calma (General Electric), Intergraph, Applicon (Schlumberger), and Computervision.
 - Banking and finance competitors by product area include:
 - TeleCheck: Telecredit.
 - Payment Systems: National Data Corporation.
 - Banking Systems (small to medium bank market): Florida Software (Kirchman Corporation).
 - International Banking and Investment Systems (IBIS): Hoskyns Group Ltd. (Martin Marietta).
 - Financial and Insurance Information Systems: Logica, Inc.
 - Remote computing services competitors include Computer Sciences Corporation (CSC), General Electric Information Services Company (GEISCO), Boeing Computer Services (BCS), and Martin Marietta Data Systems.

- Value-added network competitors fall into three categories as follows:
 - . Network companies: Telenet, Uninet, CompuServe, and Autonet (Automatic Data Processing, Inc.).
 - . Remote computing services companies: GEISCO, BCS, and CSC.
 - . Hardware vendors: IBM and AT&T.
- Telephone industry competitors include:
 - . Remote computing services companies: BCS, GEISCO, and Electronic Data Systems.
 - . Niche competitors: Auxton Computer Enterprises and Telic Services Corporation.
 - . IBM-based in-house development.

SOURCE OF REVENUE

- ISG's 1984 noncaptive revenue was derived approximately as follows:

	Revenue (\$ Millions)	Percent of Total
Processing services		
. Remote computing	\$371	41.7%
. Network services	109	12.3
Software products	35	3.9
Professional services	60	6.8
Turnkey systems	90	10.1
Minis, micros, and peripherals	155	17.5
Maintenance	<u>68</u>	<u>7.7</u>
	\$888	100.0%

- ISG's 1984 noncaptive revenue was derived from the following industry specific application areas:

	Revenue (\$ Millions)	Percent of Total
Health care	\$191	21.5%
Manufacturing	112	12.6
Banking and finance	96	10.8
Telephone	60	6.8
Insurance	35	3.9
Architecture, engineering, and construction	27	3.0
Government	22	2.5
Distribution/transportation	18	2.0
Cross industry	<u>327</u>	<u>36.9</u>
	\$888	100.0%

- ISG's 1984 noncaptive revenue was derived geographically as follows:

North America	86%
Europe	11
Japan and Pacific	2
Other	<u>1</u>
	100%

FINANCIAL UPDATE TO HIGHLIGHT DATED NOVEMBER 1982

MCDONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

P.O. Box 516
St. Louis, MO 63166
(314) 232-0232

Robert A. Fischer, President
Division of McDonnell Douglas
Corporation
Total Employees: 7,500
Total Revenue, Fiscal Year End
12/31/82: \$599,782,939
Noncaptive Revenue: \$328,291,284

MCAUTO FIVE-YEAR FINANCIAL SUMMARY (\$ thousands)

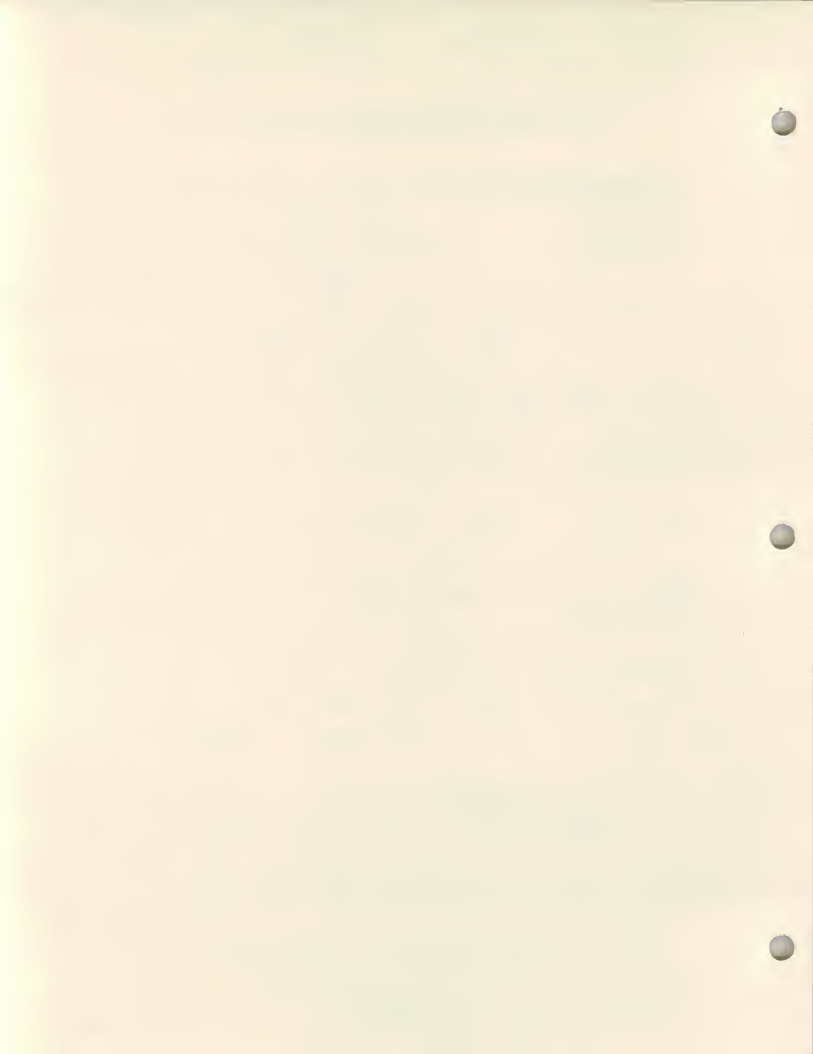
ITEM \ FISCAL YEAR	1982	1981	1980	1979	1978
Total revenue	\$ 599,783	\$ 482,831	\$ 406,908	\$ 335,408	\$ 286,775
• Percent increase from previous year	24%	19%	21%	17%	21%
Captive revenue	\$ 271,492	\$ 256,842	\$ 227,535	\$ 184,863	\$ 158,579
• Percent increase from previous year	6%	13%	23%	17%	26%
Noncaptive (commercial) revenue	\$ 328,291	\$ 225,989	\$ 179,373	\$ 150,545	\$ 128,196
• Percent increase from previous year	45%	26%	19%	17%	15%

SOURCE OF REVENUE

- MCAUTO's 1982 noncaptive revenue was derived approximately as follows:

	Percent of Total	Revenue (\$ millions)
Processing services (a)	56%	\$183
Professional services	21	70
Turnkey systems	18	60
Software products	<u>5</u>	<u>15</u>
	100%	\$328

(a) Includes reimbursed Health Services Division expenses.



COMPANY HIGHLIGHT

McDONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

P.O. Box 516
St. Louis, MO 63166
(314) 232-0232

Robert A. Fischer, President
Division of McDonnell Douglas
Corporation
Total Employees: 5,890
Total Revenue, Fiscal Year End
12/31/81: \$482,831,000
Noncaptive Revenue: \$225,989,000

THE COMPANY

- The McDonnell Automation Company was established as a separate division of McDonnell Corporation in 1960 to support internal EDP requirements and sell excess time to the commercial sector. In 1968 the company began offering timesharing services. Emphasis on competing actively in the computer services market was reinforced in 1970, when the McDonnell Automation, Douglas Information Services, and Douglas Astronautics Division merged to form the McDonnell Douglas Automation Company (MCAUTO). In the same year, MCAUTO entered the health care field by acquiring a hospital data processing system and began offering it nationally on its network service.
- MCAUTO now offers remote computing services, software products, professional services, and turnkey systems to over 3,700 commercial clients throughout the U.S.
- MCAUTO reported 1981 noncaptive revenue of \$226 million, a 26% increase over 1980. A five-year summary of captive and noncaptive revenue follows:

MCAUTO FIVE-YEAR FINANCIAL SUMMARY (\$ thousands)

ITEM \ FISCAL YEAR	1981	1980	1979	1978	1977
Total revenue	\$ 482,831	\$ 406,908	\$ 335,408	\$ 286,775	\$ 237,110
• Percent increase from previous year	19%	21%	17%	21%	25%
Captive revenue	\$ 256,842	\$ 227,535	\$ 184,863	\$ 158,579	\$ 125,373
• Percent increase from previous year	13%	23%	17%	26%	11%
Noncaptive (commercial) revenue	\$ 225,989	\$ 179,373	\$ 150,545	\$ 128,196	\$ 111,737
• Percent increase from previous year	26%	19%	17%	15%	45%

- MCAUTO opened its St. Louis computer facility in March 1981. The facility, a seven-building, \$70 million complex, contains \$133 million worth of hardware and 2,500 employees. Two new office buildings, scheduled for completion in April 1983, will accommodate approximately 1,000 employees.
- MCAUTO made the following acquisitions in the past year.
 - On December 24, 1981 MCAUTO announced the acquisition of two computer services divisions from Bradford National Corporation for \$11.8 million. The two divisions had combined revenue of \$41.1 million for the 11 months ending November 1981 and now form the MCAUTO Systems Group, Inc., a new McDonnell Douglas subsidiary. Offices are located in New York City, Albany, and Rockville (MD). The acquired divisions include:
 - Bradford Administrative Services, which processes Medicaid claims for the state of New York.
 - Bradford Systems, which provides systems development services for federal (U.S. Navy and Department of Defense), state, and local governments, and private industry.
 - In May 1982, MCAUTO's Health Services Division acquired Tymshare's Medical Systems (TMS) division, headquartered in Cupertino (CA) for an estimated \$7 to \$8 million. Included in the acquisition are three service centers and 174 employees. TMS had revenue of \$14.6 million in 1981 and adds about 80 hospitals to the total number served by MCAUTO's Health Services Division.
- MCAUTO's 1981 employees were divided as follows:

Marketing/sales	518
Software services	868
Computer operations	3,500
General and administrative	944
Other	<u>60</u>
	5,890
- MCAUTO competes with various firms in each business area.
 - Health Services competitors include HBO, Shared Medical Systems, and Technicon Medical Information Systems.
 - Remote computing services competitors include Tymshare, Computer Sciences, General Electric Information Services, and University Computing.
 - CAD/CAM competitors include IBM, Calma, Intergraph, Manufacturing Data Systems, and Applicon.

KEY PRODUCTS AND SERVICES

- Remote computing services remain the largest MCAUTO noncaptive revenue source, as seen in the following table:

	1981		1980	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
Processing services				
. Remote computing	\$131	58%	\$116	65%
. Facilities management	1	-	3	2
Software products	11	5	7	4
Professional services	21	9	17	9
Turnkey systems	33	15	13	7
Other*	<u>29</u>	<u>13</u>	<u>23</u>	<u>13</u>
	\$226	100%	\$179	100%

*Primarily reimbursed Health Services Division expenses.

- MCAUTO's 1981 noncaptive processing services revenue primarily came from the health, general business, and scientific/engineering areas, as follows:

	1981		1980	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
General business	\$ 24	18%	\$ 21	18%
Scientific/ engineering	22	17	14	12
Industry specialty				
. Health	69	53	60	50
. Manufacturing/ distribution	11	8	14	12
. Government	3	2	4	3
. Other	<u>3</u>	<u>2</u>	<u>6</u>	<u>5</u>
	\$132	100%	\$119	100%

- Processing services were primarily remote computing (99%), with some facilities management (1%). Remote computing was dominated by remote batch processing (75%), followed by interactive processing (17%). An additional 8% comes from miscellaneous processing services.
- MCAUTO's services are provided by Health Services, CAD/CAM Systems, General Marketing Services, and MCAUTO Systems Group, Inc. Each segment offers processing services, software products, turnkey systems, or professional services in its area of specialization. Applications available on MCAUTO's network are shown in the exhibit.

EXHIBIT

KEY APPLICATIONS AVAILABLE ON MCAUTO'S IBM AND CYBER SERVICE

APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<ul style="list-style-type: none"> ● OPERATING ENVIRONMENT <ul style="list-style-type: none"> — CDC CYBER 175, 170s-730, 750, 760, 835, NOS 1.4 — IBM 3081, 3033, 3032, OS/MVS ● DISTRIBUTED PROCESSING SYSTEMS <ul style="list-style-type: none"> — GROUP CLAIMS REPORTING SYSTEM — WORKERS COMPENSATION — AUTOCOUNTANT — PATIENT CARE SYSTEM (PCS) ● PROGRAMMING LANGUAGES SUPPORTED <ul style="list-style-type: none"> — APL — FORTRAN — ASSEMBLY — PL/1 — BASIC — SIMSCRIPT — COBOL — PASCAL ● DATA MANAGEMENT SOFTWARE <ul style="list-style-type: none"> — IMS — CICS — SYSTEM 2000 — CONFIRM ● BUSINESS AND FINANCE <ul style="list-style-type: none"> — AUTOCOUNTANT — FINANCIAL PLANNING (AUTOPLAN) — SHAREHOLDER RECORDS — STOCK TRANSFER (ASTS) — DIVIDEND REINVESTMENT (DRS) — CHECK RECONCILIATION — FINANCIAL CONSOLIDATION SYSTEM (FCS) — ANNUIT ● HOSPITAL AND HEALTH CARE <ul style="list-style-type: none"> — PATIENT CARE (PCS) — DATA COLLECTION (HDC) — FINANCIAL CONTROL (HFC) — PHYSICIAN DATA SERVICES — MEDICAL RECORDS ● MANUFACTURING/DISTRIBUTION <ul style="list-style-type: none"> — PROCESS PLANNING (CAPP) — CAPACITY PLANNING (CAPOSS) — ON-LINE ORDER PROCESSING (CO-OP) — FREIGHT RATING AND ROUTING — VEHICLE SCHEDULING (IVESS) — MATERIAL REQUIREMENTS PLANNING — ENGINEERING ACCOUNTING — ORDER TRACKING 	<ul style="list-style-type: none"> ● OPERATIONS RESEARCH/STATISTICAL <ul style="list-style-type: none"> — BOX-JENKINS PROGRAMS — CONTINUOUS SYSTEMS MODELING — SIMULATION (GASP IV, GPSS V) — NETWORK OPTIMIZATION (GNET) — STATISTICAL (SAS, STATPAK/TSO, UCLA BMD, COSAN, IBM SCIENTIFIC SUBROUTINES, IMSL LIBRARIES) ● INSURANCE <ul style="list-style-type: none"> — EMPLOYEE BENEFIT (EBS) — GROUP CLAIMS (GCPS) — MEDICARE B CLAIMS — PATIENT SERVICE RECORDS (PSRS) — WORKERS COMPENSATION (WCPS) ● MANAGEMENT CONTROL <ul style="list-style-type: none"> — MANAGEMENT SCHEDULING AND CONTROL SYSTEM (MSCS) — COST PLANNING AND EVALUATION SYSTEM (COPES) — MAPS/TMAPS ● SCIENCE AND ENGINEERING <ul style="list-style-type: none"> — CHEMICAL PROCESS ENGINEERING — CIVIL ENGINEERING — ELECTRIC POWER ENGINEERING — MATHEMATICS — ELECTRONICS ENGINEERING — NUCLEAR ENGINEERING — STRUCTURAL ENGINEERING — MCAUTO OFFSHORE PROGRAMS — NISEE EARTHQUAKE PROGRAMS — MECHANICAL ENGINEERING (BUILDING, DUCT DESIGN, HEAT TRANSFER, PIPING AND VESSELS) ● OTHER <ul style="list-style-type: none"> — TELEPHONE INDUSTRY APPLICATIONS — GRAPHICS (VIVIDATA) — TEXT EDITING (DATA DIALOG) — PROJECT MANAGEMENT — PROGRAM AIDS — COMPUTER OUTPUT MICROFILM — FASTDRAW (MODELING/GRAPHICS) — COMPUTER PERFORMANCE AND CAPACITY MANAGEMENT

- MCAUTO's Health Services Division (HSD) is the second largest vendor of computer services to hospitals. HSD, including reimbursed expenses, provides almost half of MCAUTO's total revenue as shown:

HEALTH SERVICES

	1981		1980	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
Processing services	\$ 69	63%	\$60	69%
Turnkey systems	12	11	4	5
Reimbursed expenses	<u>29</u>	<u>26</u>	<u>23</u>	<u>26</u>
	\$110	100%	\$87	100%

- The highest growth in HSD's revenue came from turnkey systems (300%) with processing services growing at 15%.
- At the end of 1981, HSD served a total of 1,254 hospitals, clinics, and medical groups in 46 states. A five-year summary of the major hospital base, excluding clients using MRII only, follows:

	1981	1980	1979	1978	1977
Hospitals served	584	574	499	473	427
Number of beds	118,016	118,163	104,291	98,140	88,429

- The Hospital Financial Control (HFC) system, introduced in 1970, provides the major hospital accounting functions. Data is transmitted via on-line terminals from the hospital financial office to the St. Louis HSD data center.
- Applications include accounts payable and receivable, budget planning, financial statements, fixed asset and expenditure control, inventory control, labor management, patient billing (including occasions of service and family billing) and census, property accounting, and registration control.
- Meditext, a multifunction word processing system, recently became available on the HFC system.
- HFC is used by 584 hospitals across 45 states and the District of Columbia.
- MCAUTO recently introduced the DataComm system for use in conjunction with HFC. DataComm allows in-house processing and the concurrent operation of such multiple modules as distributed data entry, word processing, report generation, remote

teleprocessing, admission forms printing, computer graphics (Medigraph module), and custom programming. Larger, more complex applications are processed through the HFC system.

- The Hospital Data Communication (HDC+) system, introduced in 1975, provides an internal communication system allowing nurse station and departmental data capture and reporting.
 - HSD installs a Digital Equipment PDP-11 and Four-Phase Model IV/70 minicomputer at the hospital site connected to terminals located throughout the facility. Accounting data is routed to the financial office for use with the HFC processing service.
 - The system is modular and functions can be added as requested by the hospital. Applications are on-line and include inpatient admissions, transfers, and discharges; outpatient and emergency room registrations; patient history with reregistration; order entry, communication, and charging; laboratory and pharmacy processing; dietary; preventive maintenance; doctor's mailbox; and a financial system interface that automatically transfers accounting transactions to HFC or other financial processors.
 - HDC+ is used by 56 hospitals representing approximately 20,000 beds. It is marketed to hospitals in the 150- to 600-bed range.
- The Patient Care System (PCS) is an on-site integrated hospital information system.
 - PCS provides modules for automating most nonaccounting hospital functions including ordering, scheduling, reporting, communications, patient medical history, and registration. Modules for specific departmental needs are available.
 - Processing and communications capabilities are distributed among Tandem Non-Stop II minicomputers located at the hospital site. PCS allows from two to 16 processors to operate under a single operating system.
 - PCS maintains a central data base of patient information collected from remote terminals. The data base can be interfaced with HFC or other financial systems.
 - There are currently 10 installations of PCS, primarily in hospitals in the 200- to 700-bed range.
- The Minicomputer-based Hospital System (MHS), introduced in July 1980, is a turnkey hospital financial system developed by Management Systems Associates.

- MHS provides general accounting (accounts payable, general ledger, payroll, and personnel), patient accounting (accounts receivable, patient account management, patient and insurance billing, and revenue control), patient registration and control (patient registration and census), and materials management (fixed asset accounting, inventory control, and preventive maintenance).
- MHS is now available with the Meditext word processing option.
- MHS uses Microdata Models 4000, 6000, and 8000 minicomputers, operates interactively, and can support up to 47 terminals.
- The system ranges in price from \$4,000 to \$15,000 per month.
- Introduced in September 1982, Labcom+ is a clinical laboratory turnkey system developed by Laboratory Consulting, Inc. and marketed exclusively by MCAUTO Health Services. Labcom+ is available as a stand-alone system or may be interfaced with MCAUTO's HDC+, MHS, or PCS systems to provide communication between the laboratory and other hospital departments.
 - Labcom+ also supports multiple interfaces to automated laboratory instruments.
 - The system runs on DEC minicomputers.
- Physician Data Services, introduced in 1977, provides business management and patient accounting to physicians and medical groups. Users connect to the HSD data center via on-line terminals. There are currently 80 users.
- The Medical Records Information (MRII) system, acquired from California Health Data Corporation in 1977, collects, edits, and analyzes medical statistics for inpatients and the emergency room.
 - MRII is primarily a batch operation with required data submitted on paper abstracts. An on-line system (Inter-ACT) based on an IBM 5285 microcomputer was introduced in April 1981. Inter-ACT provides local data entry and remote batch processing.
 - EasyCode, an on-line medical records coding system, became available on the MRII system in October 1982.
 - There are currently over 950 facilities using the MRII system.
- HSD offers reports and abstracts on microfiche as well as in standard paper form. Microfiche is produced on a Datagraphix system.

MCDONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

- The General Marketing segment (including CAD/CAM) provides general business, scientific/engineering, and industry specialty processing services, software products, turnkey systems, and professional services, segmented as follows:

	1981		1980	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
Processing services	\$ 63	54%	\$59	64%
Software products	11	10	7	8
Professional services	21	18	17	18
Turnkey systems	<u>21</u>	<u>18</u>	<u>9</u>	<u>10</u>
	\$116	100%	\$92	100%

- Major applications offered by the general business segment are:
 - General accounting functions, provided through the AUTO-COUNTANT system, include accounts payable and receivable, fixed asset accounting, general ledger, payroll, and personnel. Four-Phase minicomputers are used as front-end processors at user sites for the processing service. Approximately 55 systems costing from \$1,200 to \$120,000 per year have been installed.
 - Financial planning functions available on the network include modeling, financial consolidation, shareholder accounting, check reconciliation, and stock transfer.
 - STRADIS/DRAW, introduced in June 1982, is an interactive graphics system which automates structured systems documentation by drawing two-dimensional diagrams with text. The system contains all 22 graphics symbols needed to construct data flow diagrams, system structure charts, and free-form diagrams.
 - STRADIS/DRAW is sold as a package including a Tektronix 4113 intelligent eight-color raster terminal and 4632 hard-copy unit for \$60,000. STRADIS/DRAW software sold separately is priced at \$35,000.
 - STRADIS or another structured methodology package is required to use the system, which runs on IBM and compatible mainframes under MVS.
- Scientific and engineering applications are primarily in the areas of chemical process engineering, civil engineering, electric power engineering, electronics engineering, mathematics, mechanical engineering, nuclear engineering, statistics, structural, and offshore structural engineering. A large portion of General Marketing's professional services revenue was engineering related.

- New scientific/engineering products include:
 - Bridge Design System (BRDS) aids design engineers in the description, analysis, and rating of conventional reinforced and prestressed concrete highway bridges.
 - Fire Sprinkler Programs (FSC) select the most efficient fire sprinkler system for a given water supply and coverage area.
 - Surge Network Analysis (SURNAL) evaluates water pressure surges in piping systems for prevention of damage resulting from sudden valve closure or pump power failure.
 - Construction Reporting, Evaluating, and Work Scheduling System (CREWS) performs resource allocation for small construction and utility crews.
 - Nuclear Fuel Cycle analyzes fuel consumption and plant performance in estimating nuclear fuel requirements.
 - Plant Engineering Resources Management and Control (PERMAC) controls plant maintenance, productivity, and output.
 - STARDYNE is a finite element structural analysis system for solving structural/mechanical design problems.
 - STRUDL RECON is used for designing reinforced concrete structures.
 - THERM is a heat-rate analysis program for electric power plants developed by EDS Nuclear Inc.
 - The Surface Mining Information System (SMIS) simplifies the monitoring, control, and management of state surface mining permits, regulations, and operations.
- The industry specialty segment within General Marketing includes services provided to manufacturers, government, insurance, education, distribution, communications, and construction companies.
- Manufacturing applications include materials requirement planning, process planning, on-line ordering, freight routing, and various modeling systems. Two systems are available as software products running on IBM 360, 370, 303X, and 43XX machines.

- Cost Planning and Evaluation System (COPES) estimates, budgets, and forecasts contract and subcontract costs and licenses for \$1,530 per month.
- Management Scheduling and Control System (MSCS) applies resource leveling algorithms to time-phased networks. MSCS lists for a one-time license fee of \$50,000 or \$1,450 per month under monthly license.
- Government applications include construction services and systems development for state governments.
- Insurance applications include group and property claims processing and reporting, patient service records, Medicare claims processing, and workmen's compensation. Two systems are available as turnkey systems and two are sold as software products.
- Workers' Compensation, providing detailed and summary information on in-house and state claims and accident analysis reports, has five systems installed.
- Property Claims Management System, available on IBM 8100s for the property and casualty insurance industry, provides field office processing capabilities connected to a home office host computer or MCAUTO's 370 host. Features include establishment and control of reserves, claim processing on an occurrence basis, automatic draft issue, automatic payment schedules, and a continuous diary.
- Group Claims Reporting is available as a software product on Four-Phase IV/60 and IV/90 minicomputers and is licensed for \$2,000 to \$6,000 per month. Eight systems have been installed.
- In February 1982 MCAUTO acquired exclusive marketing rights to the Membership System, an on-line group health insurance membership-billing software package developed by Nebraska Blue Cross and Blue Shield (BC/BS) specifically for BC/BS plans.
 - The system handles group and subscriber/dependent identification card issuance, premium billing, cash entry, and remittance balancing and can accommodate increasing volume, additional lines of business, and new group handling procedures.
 - With some modification the system can accommodate membership billing for life and other health

insurance plans. The package can interface with GCPS Blue or other in-house administrative systems.

- The Membership System runs on IBM mainframes and is priced at \$300,000.
- MCAUTO entered into a facilities management contract in 1980 with a Middle Eastern government to operate a large computer facility. All facilities management revenue was from this contract.
- New industry specialty products available on the processing service include:
 - The Outward Telephone Information System (OTIS) tracks telephone set inventory, movement, and performance.
 - The Pricing and Loading System (PAL) assists telephone companies in managing the repair and maintenance of complex switching equipment.
 - Three facilities administration applications for telephone companies can be used as an integrated system for conversion to electronic or digital switches.
 - Directory and Equipment Number Status System (DENS) counts and assigns telephone and equipment numbers and provides special purpose reporting.
 - Cable and Pair Status System (CAPS) provides inside plant and mainframe administration.
 - Mechanized Assignment and Control System (MAC) provides inside and outside plant administration.
 - FREIGHT Bill Audit is an on-line system which audits freight charges and retains shipping information for periodic analysis. It is primarily available as a software package running on IBM equipment and priced at \$50,000.
 - GCPS Dental, introduced in April 1982, is an enhanced version of GCPS (Group Claims Processing System) offering tooth chart editing and updating and a cost estimation feature.
 - An optional paperless claims module for GCPS Blue (a modified version of GCPS for Blue Cross and Blue Shield

plans) accepts claims information directly from hospitals and providers submitted via terminal, magnetic tape, or cassette.

- MCAUTO Manufacturing Control System (MMCS), a manufacturing production control tool, provides job shop scheduling, work sequence lists, completion data estimates, and capacity requirement predictions. MMCS uses IBM's CAPOSS-E capacity planning software and processes data in either batch, on-line, or distributed modes.
- ESTEK, an on-line cost estimating system for the construction industry.
- Noncaptive revenue from the CAD/CAM Systems segment grew 154% to \$33 million in 1981. MCAUTO noncaptive revenue from this segment is expected to reach \$60 million in 1982. Processing services and turnkey systems are provided in the mechanical and AEC CAD/CAM areas, as follows:

	1981		1980	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
Processing services	\$12	36%	\$ 7	54%
Software products	-	-	1	8
Turnkey systems	<u>21</u>	<u>64</u>	<u>5</u>	<u>38</u>
	\$33	100%	\$13	100%

- UNIGRAPHICS is an interactive turnkey graphics system supporting all phases of the design/manufacturing cycle. The system runs on Data General Eclipse S/140, 230, and 250 (AOS) and MV-8000 (AOS/VS) minicomputers, as well as DEC PDP-11/70 and -11/44 (RSX-11M), and VAX-11/780 (VMS). Up to 10 workstations are supported.
- There are 148 UNIGRAPHICS systems installed. System prices range from \$100,000 to \$800,000. The system is also available on the network service.
- Applications available include:
 - GRIP^{T.M.}, MCAUTO's interactive programming language, which allows users to customize UNIGRAPHICS systems.
 - Graphics Lathe Module (GLM) for graphic NC tape production for lathes.
 - Graphics Mill Module (GMM) for graphics NC tape production for milling machines.

- Graphics Multi-Axis Module (GMAX), NC programming for three-to-five-axis machining.
- Graphics Schematics (GSM) for all types of schematic work.
- Graphics Finite Element Modeling (GFEM) for structural analysis.
- UNIAPT^{T.M.}, a numerical control part-programming language sold on Data General Eclipse 5230/250 and NOVA 3-12, and DEC 11/70 systems, supports applications for computer-aided manufacturing.
- COMPU DRIVE, a numerical control application, and CADD, a geometric modeling tool, were dropped from the network service.
- In October 1981 MCAUTO introduced the UNIGRAPHICS A-100, a smaller CAD/CAM system for the mechanical design, drafting, and numerical control markets. The system includes a Data General 5/140 minicomputer, complete UNIGRAPHICS software, and a graphic display terminal featuring either a direct view storage, monochrome raster, or color raster tube. The basic system sells for \$90,000 to \$120,000.
- A communications package is being developed which will connect remote A-100 systems with larger, centralized UNIGRAPHICS systems.
- An IGES post processor is scheduled for introduction in late 1982.
- Also introduced in October 1981 was the D-100, an improved graphics workstation for the multiterminal UNIGRAPHICS system.
- An interface between UNIGRAPHICS software and Manufacturing Data Systems, Inc.'s COMPACT II parts-programming language became available in April 1982. The interface provides COMPACT II users with complete CAD/CAM capabilities and is available on all UNIGRAPHICS systems.
- In March 1982 MCAUTO announced an interface for its UNIGRAPHICS and FASTDRAW systems on the DEC VAX-11/780. The interface enables FASTDRAW to create finite element models from three-dimensional part geometry created with UNIGRAPHICS.

- Other CAD/CAM products include:
 - FASTDRAW/3, an interactive structural modeling graphics system, is available on DEC VAX-11/780 minicomputers. FASTDRAW/3 displays in two or three dimensions, runs NASTRAN structural analysis, and provides post-processing. The system is available as a turnkey system for \$35,000 or as a processing service for \$1,700 to \$2,600 per month or \$70 to \$80 per hour.
 - General Drafting System (GDS), acquired from Applied Research of Cambridge Ltd. (ARC), provides two-dimensional drafting for engineering designs, architectural layout, maps, and schematics. GDS is available on the processing service or packaged as a turnkey system with DEC VAX-11/780 or Prime 150 to 850 minicomputers. A typical turnkey system costs \$190,000.
 - Building Design System (BDS), also acquired from ARC, provides a three-dimensional system to model heating and cooling systems, structural beams and columns, wires and panels, and interior walls and floors. BDS is available on the processing service or on the same equipment as GDS.
- MCAUTO Systems Group, Inc. (MSGI), formed after the acquisition of two Bradford computer services divisions in December 1981, provides Medicaid claims processing and professional services for government and private industry.
 - Recent Medicaid processing contract awards include the following:
 - In May 1982 MSGI was awarded a \$50 million, three-year contract to continue processing Medicaid claims for the New York State Department of Social Services. The contract, which is effective November 1, 1982, is subject to two one-year extensions.
 - In June 1982 a three-year, \$10 million Medicaid claims processing contract was received from the state of Arizona.

INDUSTRY MARKETS

	1981		1980	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
Discrete manufacturing	\$ 35	15%	\$ 23	13%
Process manufacturing	8	4	5	3
Utilities	21	9	20	11
Medical/hospital	110	49	88	49
Wholesale/retail	5	2	5	3
Government	6	3	7	4
Banking and finance	3	1	2	1
Insurance	6	3	4	2
Construction	6	3	4	2
Architects and engineers	12	5	11	6
Other	<u>14</u>	<u>6</u>	<u>10</u>	<u>6</u>
	\$226	100%	\$179	100%

GEOGRAPHIC MARKETS

- MCAUTO derived approximately 95% of 1981 noncaptive revenue from the U.S. and 5% from Europe, Canada, India, Australia, Japan, and the Middle East.
 - MCAUTO maintains 65 offices in the U.S. and one each in Bonn, West Germany; Woking, England; and The Hague, The Netherlands.
 - UNIGRAPHICS CAD/CAM systems accounted for more than half of international sales.
- Foreign licensing agreements to market MCAUTO services are held with:
 - Aquitaine Systems, headquartered in Paris, for France, Spain, and Portugal.
 - BOC Datasolve for the United Kingdom.
 - DATEMA AB, headquartered in Stockholm, for Sweden, Norway, Denmark, and Finland.
 - Mitsui Engineering and Shipbuilding in Tokyo, Japan.
 - Voest Alpine, headquartered in Vienna, markets CAD/CAM products in Austria.

COMPUTER HARDWARE

- Remote computing services are supplied from two data centers in St. Louis (MO) and centers in Huntington Beach (CA) and Long Beach (CA). MSGI provides processing through data centers in Mahwah (NJ), Milwaukee, and Dallas. Access to the network is through MCAUTOnet, an internally developed data communications network.
- MCAUTO currently maintains 307 computers for in-house and external users. IBM 30XX mainframes are used for hospital and general business applications. Scientific and engineering applications are run on CDC CYBER equipment.
- At the end of September 1982 there were 11,061 commercial terminal IDs, 3,201 health services terminal IDs, and 9,464 captive terminal IDs in effect.

COMPANY PROFILE

MCDONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

P.O. Box 516
St. Louis, MO 63166
(314) 232-0232

W. R. Orthwein, Jr., Chairman
A. Joseph Quackenbush, President
Division of McDonnell Douglas
Corporation
Total Employees: 5,542
Total Revenue, Fiscal Year End
12/31/80: \$406,908,000
Noncaptive Revenue: \$179,373,000

THE COMPANY

- The McDonnell Automation Company was established as a separate division of McDonnell Corporation in 1960 to support internal EDP requirements and sell excess time to the commercial sector. In 1968, the company began offering timesharing services. Emphasis on competing actively in the computer services market was reinforced in 1970, when the McDonnell Automation, Douglas Information Services, and Douglas Astronautics Division were merged to form the McDonnell Douglas Automation Company (MCAUTO). In the same year, MCAUTO entered the health care field by acquiring a hospital data processing system and began offering it nationally on its network service.
- MCAUTO now offers remote computing services, software products, professional services, and turnkey systems throughout the U.S. The Health Services Division, the largest revenue source within MCAUTO, is the second largest vendor of hospital remote computing services.
- MCAUTO reported 1980 noncaptive revenue of \$179.4 million, a 19% increase over 1979. A five-year summary of captive and noncaptive revenue follows:

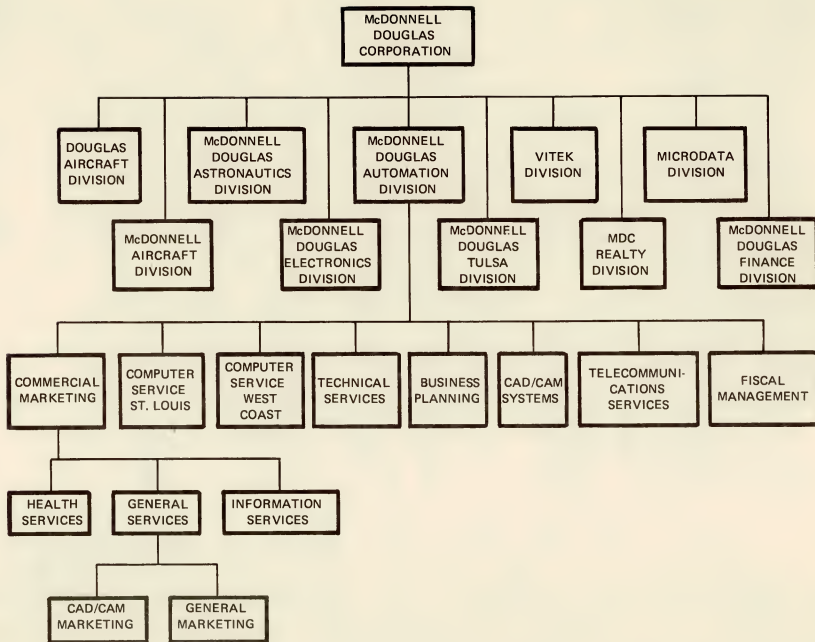
MCAUTO
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands)

1981
Total 453,410,721
Non-captive 226,148,001

ITEM \ FISCAL YEAR	1980	1979	1978	1977	1976
Total revenue	\$406,908	\$335,408	\$286,775	\$237,110	\$190,198
• Percent increase from previous year	21%	17%	21%	25%	16%
Captive revenue	\$227,535	\$184,863	\$158,579	\$125,373	\$113,349
• Percent increase from previous year	23%	17%	26%	11%	5%
Noncaptive (commercial) revenue	\$179,373	\$150,545	\$128,196	\$111,737	\$ 76,849
• Percent increase from previous year	19%	17%	15%	45%	38%

- Revenue for the first quarter ending March 31, 1981, was \$118.6 million total and \$51.3 million noncaptive. Second quarter results ending June 30, 1981, were \$118.3 million total and \$52.5 million noncaptive. Year-to-date revenue through June 1981 was \$236.9 million total and \$103.8 million noncaptive.
- Expenditures for research and development in 1980 were \$31.7 million, an increase of 28% over 1979 expenditures of \$24.8 million.
- MCAUTO opened its new St. Louis computer facility in March 1981. The facility, a seven-building \$70 million complex, contains \$133 million worth of hardware and 2,500 employees.
- MCAUTO is one of 10 McDonnell Douglas Corporation divisions. MCAUTO itself is divided into eight operating units, as seen in Exhibit A.
- MCAUTO has acquired two new products and two companies in the last year.
 - In March 1980, MCAUTO acquired the mini-based Hospital System (MHS) product from Management Systems Associates of Raleigh (NC). MHS, the basis for MCAUTO's turnkey hospital financial system, operates on Microdata minicomputers.
 - In March 1981, MCAUTO acquired exclusive U.S. marketing rights to GDS (General Design System) and BDS (Building Design System) from Applied Research of Cambridge Ltd. of Cambridge, England. The systems operate on Digital Equipment and Prime minicomputers.

EXHIBIT A



MCDONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

- In April 1981, MCAUTO acquired Improved Systems Technologies, Inc. (IST). IST develops structured systems development methodologies including STRADIS (Structured Analysis, Design, and Implementation of Systems). IST offers seminars and consulting in its methodologies.
- In July 1981, MCAUTO U.K. Ltd. acquired the engineering services division of BOC Datasolve, the United Kingdom's largest computer services company. BOC will continue to provide processing services and MCAUTO will assume marketing, support, and development responsibilities.
- MCAUTO's 1980 employees were divided as follows:

- Marketing/Sales	1,240
- Software Services	390
- Computer Operations	3,180
- General and Administrative	680
- Other	<u>52</u>
	5,542
- MCAUTO competes with various firms in each business area.
 - Health services competitors include HBO, Shared Medical Systems, and Technicon Medical Information Systems.
 - Remote computing services competitors include Tymshare, Computer Sciences, General Electric Information Services, University Computing, and Manufacturing Data Systems.

KEY PRODUCTS AND SERVICES

- Remote computing services remain the largest MCAUTO noncaptive revenue source, as seen in the following table:

	1980		1979	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
Processing Services				
. Remote Computing	\$116	65%	\$105	70%
. Facilities Management	3	2	-	-
Software Products	7	4	4	3
Professional Services	17	9	16	11
Turnkey Systems	13	7	8	5
Other*	<u>23</u>	<u>13</u>	<u>18</u>	<u>11</u>
	\$179	100%	\$151	100%

*Primarily reimbursed Health Services Division expenses.

MCDONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

- MCAUTO's 1980 noncaptive processing services revenue primarily came from the health, manufacturing, and general business areas, as seen in the following table:

	1980		1979	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
General Business	\$ 21	18%	\$ 20	19%
Scientific/Engineering	14	12	11	10
Industry Specialty				
. Health	60	50	48	46
. Manufacturing/Distribution	14	12	20	19
. Government	4	3	3	3
. Other	<u>6</u>	<u>5</u>	<u>3</u>	<u>3</u>
	\$119	100%	\$105	100%

- Processing services were primarily remote computing (97%), with some facilities management (3%). Remote computing was dominated by remote batch processing (76%), followed by interactive (14%), and inquiry/response (10%) processing.
- MCAUTO's services are divided into three segments: Health Services, CAD/CAM Systems, and General Marketing Services. Each segment offers processing services, software products, turnkey systems, and professional services in its area of specialization. Applications available are shown in Exhibit B.
- The Health Services Division (HSD), MCAUTO's largest business segment, represented approximately half of 1980 noncaptive revenue. 1980 revenue by mode of delivery follows:

	Revenue (\$ millions)	Percent of Total
Processing services	\$60	69%
Turnkey systems	4	5
Reimbursed expenses	<u>23</u>	<u>26</u>
	\$87	100%

- The HSD client base has grown significantly over the last five years. At year end 1980, HSD served a total of 1,150 hospitals, clinics, and medical groups in the U.S. A summary of the major hospital base, excluding clients using MR11 only, follows:

EXHIBIT B

KEY APPLICATIONS AVAILABLE ON MCAUTO'S IBM AND CYBER SERVICE

APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<ul style="list-style-type: none"> ● OPERATING ENVIRONMENT <ul style="list-style-type: none"> – CDC CYBER 170s, NOS – IBM 3032, 3033, 370/158, OS/MVS ● DISTRIBUTED PROCESSING SYSTEMS <ul style="list-style-type: none"> – GROUP CLAIMS REPORTING SYSTEM – WORKERS COMPENSATION – AUTOCOUNTANT – PATIENT CARE SYSTEM (PCS) ● PROGRAMMING LANGUAGES SUPPORTED <ul style="list-style-type: none"> – APL – FORTRAN – ASSEMBLY – PL/1 – BASIC – SIMSCRIPT – COBOL ● DATA MANAGEMENT SOFTWARE <ul style="list-style-type: none"> – IMS – CICS – SYSTEM 2000 – CONFIRM ● BUSINESS AND FINANCE <ul style="list-style-type: none"> – AUTOCOUNTANT – FINANCIAL PLANNING (AUTOPLAN) – SHAREHOLDER RECORDS – STOCK TRANSFER (ASTS) – DIVIDEND REINVESTMENT (DRS) – CHECK RECONCILIATION – FINANCIAL CONSOLIDATION SYSTEM (FCS) – ANNUIT ● HOSPITAL AND HEALTH CARE <ul style="list-style-type: none"> – PATIENT CARE (PCS) – DATA COLLECTION (HDC) – FINANCIAL CONTROL (HFC) – PHYSICIAN DATA SERVICES – MEDICAL RECORDS ● MANUFACTURING/DISTRIBUTION <ul style="list-style-type: none"> – PROCESS PLANNING (CAPP) – CAPACITY PLANNING (CAPOSS) – ON-LINE ORDER PROCESSING (CO-OP) – FREIGHT RATING AND ROUTING – VEHICLE SCHEDULING (IVESS) – MATERIAL REQUIREMENTS PLANNING – NUMERICAL CONTROL (COMPUDRIVE) – ENGINEERING ACCOUNTING – ORDER TRACKING 	<ul style="list-style-type: none"> ● OPERATIONS RESEARCH/STATISTICAL <ul style="list-style-type: none"> – BOX-JENKINS PROGRAMS – CONTINUOUS SYSTEMS MODELING – SIMULATION (GASP IV, GPSS V) – NETWORK OPTIMIZATION (GNET) – STATISTICAL (SAS, STATPAK/TSO, UCLA BMD, COSAN, IBM SCIENTIFIC SUBROUTINES, IMSL LIBRARIES) ● INSURANCE <ul style="list-style-type: none"> – EMPLOYEE BENEFIT (EBS) – GROUP CLAIMS (GCPS) – MEDICARE B CLAIMS – PATIENT SERVICE RECORDS (PSRS) – WORKERS COMPENSATION ● EDUCATION <ul style="list-style-type: none"> – ON-LINE EDUCATIONAL SERVICE (AESOP) – ATTENDANCE – CENSUS REPORTING – FINANCIAL ACCOUNTING; PAYROLL – GRADE REPORTING – STUDENT SCHEDULING ● SCIENCE AND ENGINEERING <ul style="list-style-type: none"> – CHEMICAL PROCESS ENGINEERING – CIVIL ENGINEERING – ELECTRIC POWER ENGINEERING – MATHEMATICS – ELECTRONICS ENGINEERING – NUCLEAR ENGINEERING – STRUCTURAL ENGINEERING – MCAUTO OFFSHORE PROGRAMS – NISEE EARTHQUAKE PROGRAMS – MECHANICAL ENGINEERING (BUILDING, DUCT DESIGN, HEAT TRANSFER, PIPING AND VESSELS) ● OTHER <ul style="list-style-type: none"> – TELEPHONE INDUSTRY APPLICATIONS – GRAPHICS (VIVIDATA) – TEXT EDITING (DATA DIALOG) – PROJECT MANAGEMENT – PROGRAM AIDS – COMPUTER OUTPUT MICROFILM – FASTDRAW (MODELING/GRAPHICS) – COMPUTER PERFORMANCE AND CAPACITY MANAGEMENT

MCDONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

	1980	1979	1978	1977	1976
Hospitals served	574	499	473	427	326
Number of beds	118,163	104,291	98,140	88,429	81,438

- The Hospital Financial Control (HFC) system, introduced in 1970, provides the major hospitals accounting functions. Data is transmitted via on-line terminals from the hospital financial office to the St. Louis HSD data center.
 - Applications include accounts payable and receivable; budget planning; financial statements; fixed asset and expenditure control; inventory control; labor management; most account billing, patient billing, and census; property accounting; and registration control.
 - HFC is used by 581 hospitals across 45 states and the District of Columbia.
- The Hospital Data Communication (HDC+) system, introduced in 1975, provides an internal communication system allowing nurse station and departmental data capture and reporting.
 - HSD installs a Digital Equipment PDP-11 or Four-Phase Model IV/70 minicomputer on the hospital site connected to terminals located throughout the facility. Accounting data is routed to the financial office for use with the HFC processing service.
 - The system is modular and functions can be added as necessary. Applications available include on-line order entry, admissions, outpatient and emergency registration, charge collection, laboratory, pharmacy, dietary, and maintenance department communication.
 - HDC is used by 53 hospitals representing almost 14,000 beds. It is marketed to hospitals in the 150- to 600-bed range.
- The Patient Care System (PCS) is an on-site distributed hospital information system.
 - PCS provides modules for automating most non-accounting hospital functions, including ordering, scheduling, reporting, communications, patient medical history, and registration. Modules for specific departmental needs are available.
 - Processing and communications capabilities are distributed among Tandem Non-Stop II minicomputers located at the hospital site. PCS allows from two to 16 processors to operate under a single operating system.

- PCS maintains a central data base of patient information collected from remote systems. The data base can be accessed by other financial and billing systems.
 - There are currently nine installations of PCS, primarily in hospitals in the 200- to 700-bed range.
- The Minicomputer-based Hospital System (MHS), introduced in July 1980, is a turnkey hospital financial system developed by Management Systems Associates.
 - MHS provides general accounting (accounts payable, general ledger, payroll, and personnel), patient accounting (accounts receivable, patient account management, patient and insurance billing, and revenue control), patient registration and control (patient registration and census), and materials management (fixed asset accounting inventory control and maintenance).
 - MHS, uses Microdata Models 2000, 4000, 6000, and 8000 mini-computers, operates interactively, and can support up to 32 terminals.
 - The system ranges in price from \$4,000 to \$15,000 per month.
- Physician Data Services, introduced in 1977, provides business management and patient accounting to physicians and medical groups. Users connect to the HSD data center via on-line terminals. There are currently 69 users.
- The Medical Records Information (MRII) system, acquired from California Health Data Corporation in 1976, collects, edits, and analyzes medical statistics for inpatients and the emergency room.
 - MRII is primarily a batch operation, with required data submitted on paper abstracts. An on-line system (Inter-ACT) based on an IBM 5285 microcomputer was introduced in April 1981. Inter-ACT provides local data entry and remote batch processing.
 - There are currently over 800 facilities using the MRII system.
- HSD offers reports and abstracts on microfiche as well as in standard paper form. Microfiche is produced on a Datagraphix system.
- The General Marketing segment (excluding CAD/CAM) provides general business, scientific/engineering, and industry specialty processing services, software products, turnkey systems, and professional services as follows:

MCDONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

	Revenue (\$ millions)	Percent of Total
Processing services	\$52	66%
Software products	6	8
Professional services	17	21
Turnkey systems	<u>4</u>	<u>5</u>
	\$79	100%

- The general business segment reported little revenue growth in processing during 1980. The major elements consist of:
 - General accounting functions, provided through the AUTO-COUNTANT system, includes accounts payable and receivable, fixed asset accounting, general ledger, payroll, and personnel. Four-Phase minicomputers are used as front end processors at user sites for the processing service. Approximately 55 systems costing between \$1,200 per year and \$120,000 per year have been installed.
 - Financial planning functions available on the network include modeling, financial consolidation, shareholder accounting, check reconciliation, and stock transfer.
- Scientific and engineering applications are primarily in the areas of chemical process engineering, civil engineering, electric power engineering, electronics engineering, mathematics, mechanical engineering, nuclear engineering, statistics, structural, and offshore structural engineering. A large portion of General Marketing's professional services revenue was engineering related.
 - New scientific/engineering products include:
 - EASE2, a static or dynamic finite element linear analysis system.
 - Fluid Analysis and Simulation Technique (FAAST) solves fluid flow problems for fire sprinklers, domestic water distribution, industrial piping, agricultural irrigation, and fluid power.
 - Construction Reporting, Evaluating, and Work Scheduling System (CREWS) performs resource allocation for small construction and utility crews.
 - Nuclear Fuel Cycle, analyzes fuel consumption and plant performance in estimating nuclear fuel requirements.

- Plant Engineering Resources Management and Control (PERMAC) controls plant maintenance, productivity, and output.
- PROCESS, a simulation system for solving material and energy balances for the process engineer.
- STARDYNE, structural analysis system for solving structural/mechanical design problems.
- STRUDL RECON, for designing reinforced concrete structures.
- UNAMAP, a series of 11 programs for applied modeling of air pollution.
- The industry specialty segment within General Marketing includes services provided to manufacturers, government, insurance, and education.
 - Manufacturing applications include materials requirement planning, process planning, on-line ordering, freight routing, and various modeling systems. Two systems are available as software products:
 - Cost Planning and Evaluation System (COPES), which estimates, budgets, and forecasts contract and subcontract costs, operates on IBM 360, 370, 303X, and 43XX machines. Pricing ranges from \$1,500 to \$18,000 per month.
 - Management Scheduling and Control System (MSCS), which applies resource leveling algorithms to time-phased networks, operates on IBM 360, 370, 303X, and 43XX machines. MSCS costs from \$500 to \$12,000 per month.
 - Government applications include construction services and systems development for state governments.
 - Insurance applications include group and property claims processing and reporting, patient service records, medicare claims processing, and workmen's compensation. Two systems are available as turnkey systems and one is sold as a software product.
 - Workers compensation, providing detailed and summary information on in-house and state claims and accident analysis reports, has five systems installed.

- Property Claims Management System, available on IBM 8100s for the property and casualty insurance industry, provides field office processing capabilities connected to a home office host computer or MCAUTO's 370 host. Features include establishment and control of reserves, claim processing on an occurrence basis, automatic draft issue, automatic payment schedules, and a continuous diary.
- Group Claims Reporting is available as a software product on Four-Phase IV/60 and IV/90 minicomputers and is licensed for \$2,000 to \$6,000 per month. Six systems have been installed.
- MCAUTO entered into a facilities management contract in 1980 with a Middle Eastern government to operate a large computer facility. All facilities management revenue was from this contract.
- New industry specialty products available on the processing service include:
 - Engineering Accounting Service (EAS), controls the financial aspects of design engineering projects.
 - ESTEK, an on-line cost estimating system for the construction industry.
 - Financial Consolidation System (FCS), a generalized financial system.
 - Line Item Status System (LISS), a project-related material-tracking and drawing control system for construction companies.
 - Purchase Order Status and Tracking (POST), an on-line data base system that provides centralized procurement control for telephone companies.
 - Telephone Industry Marketing System (TIMS), a business account record system for tracking account assignments by sales or type of industry.
- The CAD/CAM Systems segment provides processing, software, and professional services in the mechanical CAD/CAM area, as follows:

	Revenue (\$ millions)	Percent of Total
Processing services	\$ 7	54%
Software products	1	8
Turnkey systems	<u>5</u>	<u>38</u>
	\$13	100%

- UNIGRAPHICS, an interactive graphics system supporting all phases of the design/manufacturing cycle, is sold as a turnkey system on Data General Eclipse 230/250 and MV-8000, DEC PDP-11/70, and 11/44, and VAX 11/780 minicomputers.
 - There are 101 UNIGRAPHICS systems installed. System prices range from \$35,000 to \$800,000. The system is also available on the network service.
 - Applications available include:
 - GRIP^{T.M.}, MCAUTO's interactive programming language, allows users to customize UNIGRAPHICS systems.
 - Graphics Lathe Machining (GLM) for graphic NC tape production for lathes.
 - Graphics Mill Machining (GMM) for graphic NC tape production for milling machines.
 - Graphics Multiaxis (GMX), NC programming for three-to-five-axis machining.
 - Graphics Schematics (GSM) for all types of schematic work.
 - Graphics Finite Element Modeling (GFEM) for structural analysis.
 - CADD, available on the network, enables clients to interactively create fully surfaced, three-dimensional geometric models in a real-time environment. A link between UNIGRAPHICS and CADD was developed in 1980.
 - A Distributed Graphics System (DGS) using DEC 11/70 and Evans and Sutherland Picture System II terminals was announced as a processing service in 1980.
 - UNIAPT^{T.M.}, a numerical control part-programming language sold on Data General Eclipse 230/250 and NOVA

3-12, and DEC 11/70 systems, supports applications for computer-aided manufacturing.

- COMPUDRIVE, a direct numerical control adapter for NC machinery, eliminates paper tape, shortens the tape tryout cycle, and runs multiple machine tools. COMPUDRIVE communicates either with MCAUTO's two NC services for APT or with an in-house system. It is available both on the network and as a software product.
- New CAD/CAM products include:
 - FASTDRAW/3, an interactive structural modeling graphics system, is available on DEC VAX 11/780 minicomputers. FASTDRAW/3 displays in two or three dimensions, runs NASTRAN structural analysis, and provides post-processing. The system is available as a turnkey system for \$35,000 or as a processing service for \$100 to \$5,000 per month.
 - General Drafting System (GDS), acquired from Applied Research of Cambridge (ARC), provides two-dimensional drafting for engineering designs, architectural layout, maps, and schematics. GDS is available on the processing service or packaged as a turnkey system with DEC VAX 11/780 or Prime 150 to 750 minicomputers.
 - Building Design System (BDS), also acquired from ARC, provides a three-dimensional system to model heating and cooling systems, structural beams and columns, wires and panels, and interior walls and floors. BDS is available on the processing service or on the same equipment as GDS.

INDUSTRY MARKETS

- MCAUTO's noncaptive revenue by industry over the last two years has been as follows:

	1980		1979	
	Revenue (\$ millions)	Percent of Total	Revenue (\$ millions)	Percent of Total
Discrete Manufacturing	\$ 23	13%	\$ 20	13%
Process Manufacturing	5	3	5	3
Utilities	20	11	18	12
Medical/Hospital	88	49	69	46
Wholesale/Retail	5	3	6	4
Government	7	4	3	2
Banking and Finance	2	1	1	1
Insurance	4	2	5	3
Construction	4	2	3	2
Architects and Engineers	11	6	8	5
Other	10	6	13	9
	\$179	100%	\$151	100%

GEOGRAPHIC MARKETS

- MCAUTO derived approximately 97% of 1980 noncaptive revenue from the U.S. and 3% from Europe and Canada. MCAUTO maintains 68 offices in the U.S. and one each in Bonn, West Germany, Woking, England, and The Hague, The Netherlands.
- Foreign licensing agreements to market MCAUTO services are held with:
 - Aquitaine Systemes for France, Spain, and Portugal.
 - BOC Datasolve for the United Kingdom.
 - DATEMA AB for Sweden, Norway, Denmark, and Finland.
 - Mitsui Engineering and Shipbuilding in Japan.

COMPUTER HARDWARE

- Processing services, provided from four data centers, are accessed via MCAUTOnet, an internally developed data communication network.
- MCAUTO maintains 256 computers for in-house and external users, of which 38 are on-line systems. Major mainframe equipment is installed at:
 - St. Louis general processing facility:
 - 8 IBM 3033s.
 - 2 CDC 750s.
 - 1 CYBER 175.
 - 1 CYBER 176.
 - 1 CDC 730.
 - 2 CDC 760s.
 - St. Louis Health Services Division facility:
 - 2 IBM 3032.
 - 2 IBM 3033s.
 - 1 IBM 370/158.
 - West Coast (Huntington Beach and Long Beach, CA):
 - 6 IBM 3033s.
 - 1 IBM 3032.
 - 3 IBM 4341s.
 - 1 CDC 174.
- MCAUTO plans to install multiple IBM 3081s in 1981 to replace existing IBM equipment.
- At the end of December 1980, there were 7,908 commercial terminal IDs, 3,742 health services terminal IDs, and 9,022 captive terminal IDs in effect.

COMPANY HIGHLIGHT

MCAUTO 1980
Comm'l 179.4
Total 406.9

**MCDONNELL DOUGLAS AUTOMATION
COMPANY (MCAUTO)**

P.O. Box 516
St. Louis, MO 63166
(314) 232-0232

W. R. Orthwein, Jr., Chairman
A. Joseph Guackenbush, President
Division of McDonnell Douglas
Corporation
Total Employees: 5,173
Total Revenues, Fiscal Year End
12/31/79: \$335,408,061
Non-Captive Revenues: \$150,545,000

THE COMPANY

- The McDonnell Automation Company was established as a separate division in 1960 to support the internal EDP requirements of the corporation and to sell excess time to the commercial sector. In 1968, the company began offering timesharing services. Emphasis on competing actively in the computer services market was reinforced in 1970, when the McDonnell Automation company, Douglas Information Services and its Astronautics Division were merged into MCAUTO. In the same year, MCAUTO entered the health care field by acquiring a hospital data processing system and began offering it nationally on its network service.
- MCAUTO derives the majority of its revenues from remote computing services. Its Health Services Division is the second largest computer services vendor in the hospital industry.
- MCAUTO reported non-captive revenues of \$150.5 million in 1979, a 17% increase over 1978 revenues of \$128.2 million. Following is a five-year financial summary of MCAUTO's captive and non-captive revenues:

**MCAUTO
FIVE-YEAR FINANCIAL SUMMARY
(\$ Thousands)**

ITEM \ FISCAL YEAR	1979	1978	1977	1976	1975
Captive revenues	\$184,863	\$158,579	\$125,373	\$113,349	\$108,061
• Percent of total revenues	55%	55%	53%	60%	66%
Non-captive (commercial revenues)	\$150,545	\$128,196	\$111,737	\$ 76,849	\$ 55,520
• Percent of total revenues	45%	45%	47%	40%	34%
• Percent increase from previous year	17%	15%	45%	38%	24%
Total revenues	\$335,408	\$286,775	\$237,110	\$190,198	\$163,581

COMPANY HIGHLIGHT/(MCAUTO)

- In 1979, MCAUTO's 5,173 personnel were segmented as follows:

- Marketing/sales	1,150
- Software services	300
- Computer operations	3,070
- General and administrative	600
- Other	<u>53</u>
	5,173
- MCAUTO's major competitor for health care services is Shared Medical Systems. Additional competition comes from Tymshare, HBO and Technicon. Major competitors for remote computing services are Tymshare, Computer Sciences, GEISCO, University Computing and Manufacturing Data Systems.

KEY PRODUCTS AND SERVICES

- Processing services provide the major share of MCAUTO's computer service revenues, as shown in the following summary:

	Percent of Total Revenues	Revenue Value (\$ Millions)
- Processing services	70%	\$ 105
- Software products	3	4
- Professional services	11	16
- Turnkey systems	5	8
- Other*	<u>11</u>	<u>18</u>
	100%	\$ 151

* Other: primarily reimbursed expenses from the Health Services Division.

- MCAUTO's 1979 processing revenues are further segmented as follows:

MCAUTO PROCESSING SERVICE REVENUES

Type	Percent of Processing Services Revenues	Revenue Value (\$ Millions)
General business	19%	\$ 19.7
Scientific and engineering	10	11.0
Industry-specialty:		
. Health	46	48.5
. Manufacturing/distribution	17	17.6
. CAD/CAM	2	2.4
. Government	3	2.7
. Other	<u>3</u>	<u>3.4</u>
	100%	\$105.3

COMPANY HIGHLIGHT/(MCAUTO)

- MCAUTO uses a combination of IBM and CDC hardware for network services. Applications available on MCAUTO's network are listed in Exhibit A. The largest revenue-producing applications on the network, excluding medical, are those that support engineering, insurance and the telephone industry.
 - New products recently announced on the network are:
 - UNAMAP, a series of 11 programs for applied modeling of air pollution.
 - Fluid Analysis and Simulation Technique (FAAST), a problem-solving task for water network problems.
 - Financial Consolidation System (FCS), a generalized financial system.
 - Line Item Status System (LISS), a project-related material-tracking and drawing control system for construction companies.
 - PROCESS, a simulation system for solving material and energy balances for the process engineer.
 - Telephone Industry Marketing System (TIMS), a business account record system for tracking account assignments by sales or type of industry.
 - Purchase Order Status and Tracking (POST), an on-line data base system that provides centralized procurement control for telephone companies.
 - EASE2, a static or dynamic, finite element linear analysis system.
 - Engineering Accounting Service (EAS), controls the financial aspects of design engineering projects.
- Approximately \$8 million of MCAUTO's 1979 revenues were derived from turnkey systems. Descriptions of some of the minicomputer-based products marketed by MCAUTO follow:
 - Two claims processing systems are offered on Four Phase IV/60s. Both systems are connected with MCAUTO's 370 host system and perform data entry functions and local application processing. Average costs of both systems range between \$2,000 and \$3,000 per month.
 - Group Claims Reporting System (GCRS) provides editing and claims data; calculation of totals, deductibles and co-insurance; local creation of drafts, draft registers and benefit explanation; and local printing of statistical reports. There are about five GCRS systems installed.

EXHIBIT A

KEY APPLICATIONS AVAILABLE ON MCAUTO'S IBM AND CYBER SERVICE

APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<ul style="list-style-type: none"> • OPERATING ENVIRONMENT <ul style="list-style-type: none"> – CDC CYBER 170s, NOS – IBM 3032, 3033, 370/158, OS/MVS • DISTRIBUTED PROCESSING SYSTEMS <ul style="list-style-type: none"> – GROUP CLAIMS REPORTING SYSTEM – WORKERS COMPENSATION – AUTOCOUNTANT – PATIENT CARE SYSTEM (PCS) • PROGRAMMING LANGUAGES SUPPORTED <ul style="list-style-type: none"> – APL – ASSEMBLY – BASIC – COBOL – FORTRAN – PL/1 – SIMSCRIPT • DATA MANAGEMENT SOFTWARE <ul style="list-style-type: none"> – IMS – SYSTEM 2000 – CICS – CONFIRM • BUSINESS AND FINANCE <ul style="list-style-type: none"> – AUTOCOUNTANT (ACCOUNTS PAYABLE, RECEIVABLE, FIXED ASSETS, GENERAL LEDGER, PAYROLL, PERSONNEL) – FINANCIAL PLANNING (AUTOPLAN) – SHAREHOLDER RECORDS – STOCK TRANSFER (ASTS) – DIVIDEND REINVESTMENT (DRS) – CHECK RECONCILIATION – FINANCIAL CONSOLIDATION SYSTEM (FCS) • HOSPITAL COMMUNICATION AND INFORMATION SYSTEM <ul style="list-style-type: none"> – PATIENT CARE (HPC) – DATA COLLECTION (HDC) – FINANCIAL CONTROL (HFC) • MANUFACTURING/DISTRIBUTION <ul style="list-style-type: none"> – PROCESS PLANNING (CAPP) – CAPACITY PLANNING (CAPOSS) – ON-LINE ORDER PROCESSING (CO-OP) – FREIGHT RATING AND ROUTING – VEHICLE SCHEDULING (IVESS) – MATERIAL REQUIREMENTS PLANNING (MRP) – NUMERICAL CONTROL (COMPU DRIVE) – MATERIAL MANAGEMENT (OMEGA) 	<ul style="list-style-type: none"> • OPERATIONS RESEARCH/STATISTICAL <ul style="list-style-type: none"> – BOX-JENKINS PROGRAMS – CONTINUOUS SYSTEMS MODELING – SIMULATION (GASP IV, GPSS V) – NETWORK OPTIMIZATION (GNET) – STATISTICAL (SAS, STATPAK/TSO, UCLA BMD, COSAN, IBM SCIENTIFIC SUBROUTINES, IMSL LIBRARIES) • INSURANCE/HEALTH CARE <ul style="list-style-type: none"> – EMPLOYEE BENEFIT (EBS) – GROUP CLAIMS (GCPS) – MEDICARE B CLAIMS – PATIENT SERVICE RECORDS (PSRS) – MEDICAL RECORDS ABSTRACTING • EDUCATION <ul style="list-style-type: none"> – ON-LINE EDUCATIONAL SERVICE (AESOP) – ATTENDANCE – CENSUS REPORTING – FINANCIAL ACCOUNTING; PAYROLL – GRADE REPORTING – STUDENT SCHEDULING • SCIENCE AND ENGINEERING, NUMEROUS APPLICATIONS FOR: <ul style="list-style-type: none"> – CHEMICAL PROCESS ENGINEERING – CIVIL ENGINEERING – ELECTRIC POWER ENGINEERING – MATHEMATICS – ELECTRONICS ENGINEERING – NUCLEAR ENGINEERING – STRUCTURAL ENGINEERING – MCAUTO OFFSHORE PROGRAMS – NISEE EARTHQUAKE PROGRAMS – MECHANICAL ENGINEERING (BUILDING, DUCT DESIGN, HEAT TRANSFER, PIPING AND VESSELS) • OTHER <ul style="list-style-type: none"> – TELEPHONE INDUSTRY APPLICATIONS – GRAPHICS (VIVADATA) – TEXT EDITING (DATA DIALOG) – PROJECT MANAGEMENT – PROGRAM AIDS – COMPUTER OUTPUT MICROFILM – FASTDRAW (MODELING/GRAPHICS)

COMPANY HIGHLIGHT/(MCAUTO)

- Workers Compensation (WCPS) provides detailed and summary information on in-house and state claims and accident analysis reports. Approximately five WCPS systems have been installed.
- AUTOCOUNTANT, a financial management system, offers host processing for general ledger, accounts payable, fixed assets, accounts receivable/sales analysis, personnel and payroll. It is sold on Four Phase IV/60s. MCAUTO has 50-60 AUTOCOUNTANT systems installed.
- A Property Claims Management System (PCMS) is available on IBM 8100s for the property and casualty insurance industry. It provides remote processing capabilities at the field office level, with activity interface generated to a home office host computer or MCAUTO's 370 host. PCMS uses on-line processing for all types of property and casualty losses. Features include timely establishment and control of reserves, claim processing on an occurrence basis, automatic draft issue, automatic payment schedules and a continuous diary.
- MCAUTO is marketing several products for computer-aided design and computer-aided manufacturing (CAD/CAM) applications.
 - UNIGRAPHICS, an interactive graphics system, supports all phases of the design/manufacturing cycle. It is sold as a turnkey system on Data General Eclipse 230/250 and on DEC 11/70 and 11/34.
 - There are 72 UNIGRAPHICS systems installed. Price of a system ranges from \$75,000 to \$500,000.
 - Applications available include:
 - GRIPTM, MCAUTO's exclusive interactive programming language, which allows users to customize their UNIGRAPHICS system.
 - GLM, Graphics Lathe Machining, for graphic NC tape production for lathes.
 - GMM, Graphics Mill Machining, for graphic NC tape production for milling machines.
 - GMAX, Graphics Multiaxis, NC machining for three-to five-axis machining.
 - GSM, Graphics Schematics, for all types of schematic work.
 - GFEM, Graphics Finite Element Modeling, for structural analysis.

COMPANY HIGHLIGHT/(MCAUTO)

- CADD (pronounced "caddy") is available on MCAUTO's network. Through the use of a Tektronix 4014 graphic display terminal, CADD enables clients to interactively create fully surfaced, three-dimensional geometric models in a real-time environment. A link between UNI-GRAPHICS and CADD was developed in 1980.
- A Distributed Graphics System (DGS) using DEC 11/70 and Evans and Sutherland Picture System II terminals was announced as a processing service in 1980.
- UNIAPT® is a numerical control part-programming language sold on Data General Eclipse 230/250 and DEC 11/70 systems. It supports applications for computer-aided manufacturing.
- COMPU DRIVE is a direct numerical control adapter that brings a low-cost capability to the manufacturer with NC machinery. It eliminates paper tape, shortens the tape tryout cycle and can run multiple machine tools. COMPU DRIVE communicates either with MCAUTO's two NC services for APT or with an in-house system. It is available on the network and can operate in a standalone environment.
- At the end of 1980, MCAUTO's Health Services Division (HSD) was providing shared processing and minicomputer-based services to 1,050 hospitals and 101 other health care facilities. HSD contributed 46% of MCAUTO's processing revenues in 1979. This is expected to increase to 50% for 1980. A five-year statistical summary of HSD's client base, excluding MRII users, follows:

HEALTH SERVICES DIVISION HOSPITAL STATISTICS

ITEM	FISCAL YEAR				
	1980	1979	1978	1977	1976
Hospitals served	574	499	473	427	326
Number of beds	118,163	104,291	98,140	88,429	81,438

- The major components of MCAUTO's health service applications are:
 - Hospital Financial Control (HFC) System.
 - HFC automates all major accounting functions within a hospital and provides on-line access to patient census and accounting data. HFC was designed and developed specifically for use in hospitals. It is used by 565 hospitals in 44 states (including the District of Columbia). Representative clients include the Department of Health, County of Los Angeles; District of Columbia General Hospital;

and the Department of Health and Hospitals, City of Boston.

- Hospital Data Collection (HDC) System.
 - HDC provides for in-hospital communications through the use of a DEC PDP/11 minicomputer. Functions performed include admission, outpatient and emergency registration, order entry and charge collection. HDC is used by 43 hospitals, representing 12,000 beds.
- Hospital Patient Care (HPC) System.
 - HPC, available on MCAUTO's network, provides on-line applications for laboratory information, admitting, order entry, pharmacy, central supply, outpatient and emergency room, laboratory instrumentation interface and financial system interface.
- Patient Care System (PCS).
 - PCS, offered on Tandem minicomputers, provides most of the applications used in the HFC, HDC and HPC systems. It is installed in eight facilities.
- Physician Data Services (PDS).
 - PDS is an on-line, interactive physician billing system available on MCAUTO's network. Its 47 clients include hospital-based physicians, clinics and outreach operations.
- Medical Records (MRII) Information System.
 - MRII is a reporting system that brings together statistics for evaluation of the quality of health care. It offers modules for inpatient, emergency room and outpatient statistics. While each module is independent of the others, they can be used collectively to produce a composite picture of patient care. There are 732 hospital users. INTERACT is MRII incorporated on an in-house microprocessor system.
- Mini-based Hospital System (MHS).
 - MHS, announced in July 1980, offers a complete range of interactive hospital financial applications. It operates as a standalone system sold on Microdata minicomputers. Applications available include:
 - Patient Registration and Control.

COMPANY HIGHLIGHT/(MCAUTO)

- Patient registration with on-line admissions.
 - Patient census.
- Patient Accounting System.
 - Patient and insurance billing.
 - Revenue control.
 - Patient account management.
 - Accounts receivable.
- General Accounting System.
 - General ledger.
 - Responsibility reporting.
 - Payroll and personnel.
 - Accounts payable.
- Materials management system.
 - Inventory control.
 - Fixed assets.
 - Preventive maintenance.
- MCAUTO derived approximately \$4 million in revenues from software licensing agreements in 1979. The majority of licenses are for its Group Claims Reporting System (GCRS), UNIGRAPHICS, UNIAPT, Cost Planning and Evaluation System (COPES) and Management Scheduling and Control System (MSCS) software.

INDUSTRY MARKETS

- MCAUTOS's non-captive industry revenues are estimated as follows:

- Discrete manufacturing	13
- Process manufacturing	3
- Utilities	12
- Medical/hospital	46
- Wholesale	3
- Retail	1
- Government (federal, state and local)	2
- Banking and finance	1
- Insurance	3
- Construction	2
- Architects and engineers	5
- Other	9
	<hr/>
	100%

GEOGRAPHIC MARKETS

- The majority of MCAUTO's revenues are derived from the U.S. MCAUTO maintains 68 offices in 54 U.S. cities, and one office each in Woking, England, and Bonn, West Germany.
- Foreign licensing agreements to market MCAUTO services are held with:
 - Aquitaine Systemes for France, Spain and Portugal.
 - BOC Datasolve for the United Kingdom.
 - DATEMA AB for Sweden, Norway, Denmark and Finland.
 - Mitsoi Engineering and Shipbuilding in Japan.

COMPUTER HARDWARE

- Remote computing services are supplied from two data centers in St. Louis (MO), and centers in Huntington Beach (CA) and Long Beach (CA). Access to the network is through MCAUTOnet, an internally developed data communications network.
- MCAUTO maintains 256 computers for in-house and external users, of which 38 are on-line systems. Major mainframe equipment consists of:
 - 5 IBM 30322 UPs.
 - 12 IBM 3033 UPs.
 - 1 IBM 3033 AP.
 - 2 IBM 3033 MPs.
 - 1 IBM 370/158.
 - 1 CDC CYBER 174.
 - 1 CDC CYBER 173.
 - 1 CDC CYBER 175.
 - 1 CDC CYBER 170/760.
 - 2 CDC CYBER 170/750s.
- At the end of September 1980, there were 7,677 commercial terminal IDs and 3,662 Health Services terminal IDs in effect.



COMPANY HIGHLIGHT

MC DONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

P.O. Box 516
St. Louis, MO 63166
(314) 232-0232

W. R. Orthwein, Jr., President
Division of McDonnell Douglas
Corporation
Total Employees: 4,909
Total Revenues, Fiscal Year End
12/31/78: \$286,775,000
Non-Captive Revenues: \$128,196,000

THE COMPANY

*fy 12/79 TOTAL \$335 mill
Noncaptive \$150.5 mill*

- The McDonnell Automation Company was established as a separate division in 1960 to support the internal EDP requirements of the corporation and to sell excess time to the commercial sector. In 1968 the company began offering timesharing services. Emphasis on competing actively in the computer services market was reinforced in 1970 when the McDonnell Automation Company, Douglas Information Services and its Astronautics Division were merged into MCAUTO. In the same year MCAUTO entered the health care field by acquiring a hospital data processing system and began offering it nationally on its network service.
- MCAUTO derives the majority of its revenues from remote computing services. Its Health Services Division is currently the second largest computer services vendor in the hospital industry.
- Revenues from the commercial sector have grown at least 24% per year for the last five years with the exception of 1978. MCAUTO expected a 20% increase in commercial revenues in 1978 and actually achieved 15%. The decline was attributed to:
 - Reduced sales by the Health Services Division because word circulated that a new distributed-health-care system would be announced and the Division had difficulty selling existing systems.
 - Lower revenues from United Computing Corporation than expected.
- MCAUTO has forecasted a 21% increase in non-captive revenues for 1979. If this is achieved, MCAUTO's non-captive revenues will be approximately \$155 million. A five year financial summary of MCAUTO's captive and non-captive revenues follows:

COMPANY HIGHLIGHT/MC DONNELL DOUGLAS AUTOMATION COMPANY
(MCAUTO)

MCAUTO
FIVE YEAR FINANCIAL SUMMARY
(\$ Thousands)

ITEM \ FISCAL YEAR	1978	1977	1976	1975	1974
Captive revenues	\$158,579	\$125,373	\$113,349	\$108,061	\$ 90,100
• Percent of total revenues	55%	53%	60%	66%	67%
Non-captive (commercial) revenues	\$128,196	\$111,737	\$ 76,849	\$ 55,520	\$ 44,800
• Percent of total revenues	45%	47%	40%	34%	33%
• Percent increase from previous year	15%	45%	38%	24%	36%
Total revenues	\$286,775	\$237,110	\$190,198	\$163,581	\$134,900

- In 1979, MCAUTO merged its subsidiary, United Computing Corporation, into its CAD/CAM organization.
- The 1979 acquisition of Microdata by McDonnell Douglas Corporation will not affect MCAUTO at the present time. Plans are to operate Microdata as a separate corporate subsidiary. MCAUTO is investigating joint development of new product areas with Microdata, however.
- In 1978, MCAUTO's 4,909 personnel were segmented as follows:

- Marketing/sales	1,141
- Software services and computer operations	3,074
- General and administrative	507
- United Computing personnel	<u>187</u>
	4,909
- MCAUTO's major competitor for health care services is Shared Medical Systems. Additional competition comes from Tymshare, HBO and Technicon. Major competitors for remote computing services are Tymshare, Computer Sciences, GEISCO, University Computing and Manufacturing Data Systems.

KEY PRODUCTS AND SERVICES

- Approximately 85% (\$109 million) of MCAUTO's non-captive revenues are from processing services, 10% (\$12.8 million) from professional services, and 5% (\$6.4 million) from turnkey system sales.

COMPANY HIGHLIGHT/MC DONNELL DOUGLAS AUTOMATION COMPANY
(MCAUTO)

- In 1978, MCAUTO's processing service revenues were derived from the following sources:

MCAUTO
PROCESSING SERVICE REVENUES

Type	Percent of Processing Services Revenues	Revenue Value (\$ Millions)
General Business	21%	\$ 23
Scientific and Engineering	14	15
Utility	7	8
Industry Specialty		
. Health	45	49
. Communications	11	12
. Insurance	<u>2</u>	<u>2</u>
	100%	\$ 109

- The applications available on MCAUTO's network are listed in Exhibit A. The largest revenue producing applications on the network, excluding medical, are those which support communications (telephone industry), engineering, management control, financial applications, and the distribution industry.
 - New products recently announced on the network are:
 - PIPELINE, used to design and analyze piping systems in refineries and chemical, petrochemical and power plants. PIPELINE is also linked to FASTDRAW, a graphics and display system.
 - IVESS, Interactive Vehicle Scheduling System, for scheduling trucking routes in the transport of mail for the U.S. Postal Service. MCAUTO has an exclusive license for IVESS from the developer, Decision Graphics.
 - EBS, MCAUTO's Employee Benefit System, automates the basic claim entry, calculation, and payment functions associated with the processing of employee claims for medical, dental, and vision care.
 - MCAUTO has no current plans to release a general-purpose user site hardware service in conjunction with the network. Instead, the company plans to offer new minicomputer/network services in specific application areas. Potential product areas are within engineering, communications (telephone industry), health care, distribution and insurance industries.
- Several new minicomputer/network products have recently been announced by MCAUTO:
 - Distributed FASTDRAW, an interactive structural modeling and graphic display system, has been made available on Hewlett-Packard 3000 minicomputers located in regional offices in Los Angeles, New York and St. Louis. MCAUTO is offering clients unlimited access to FASTDRAW

EXHIBIT A

KEY APPLICATIONS AVAILABLE ON MCAUTO'S 370 AND CYBER SERVICE

APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<ul style="list-style-type: none">• OPERATING ENVIRONMENT<ul style="list-style-type: none">— CDC CYBER 74 AND 175, NOS— IBM 3032, 3033, 370/148, 158, 168, OS/MVS• PROGRAMMING LANGUAGES SUPPORTED<ul style="list-style-type: none">— APL— ASSEMBLY— BASIC— COBOL— FORTRAN— PL/1— SIMSCRIPT• DATA MANAGEMENT SOFTWARE<ul style="list-style-type: none">— IMS— SYSTEM 2000— CONFIRM• BUSINESS AND FINANCE<ul style="list-style-type: none">— AUTOCOUNTANT (ACCOUNTS PAYABLE, RECEIVABLE, FIXED ASSETS, GENERAL LEDGER, PAYROLL, PERSONNEL)— FINANCIAL PLANNING (AUTOPLAN)— SHAREHOLDER RECORDS— STOCK TRANSFER (ASTS)— DIVIDEND REINVESTMENT (DRS)— CHECK RECONCILIATION• HOSPITAL COMMUNICATION AND INFORMATION SYSTEM<ul style="list-style-type: none">— PATIENT CARE (HPC)— DATA COLLECTION (HDC)— FINANCIAL CONTROL (HFC)• MANUFACTURING/DISTRIBUTION<ul style="list-style-type: none">— PROCESS PLANNING (CAPP)— CAPACITY PLANNING (CAPOSS)— ON-LINE ORDER PROCESSING (CO-OP)— FREIGHT RATING AND ROUTING— VEHICLE SCHEDULING (IVESS)— MATERIAL REQUIREMENTS PLANNING (MRP)— NUMERICAL CONTROL (COMPU DRIVE)— MATERIAL MANAGEMENT (OMEGA)	<ul style="list-style-type: none">• OPERATIONS RESEARCH/STATISTICAL<ul style="list-style-type: none">— BOX-JENKINS PROGRAMS— CONTINUOUS SYSTEMS MODELING— SIMULATION (GASP IV, GPSS V)— NETWORK OPTIMIZATION (GNET)— STATISTICAL (SAS, STATPAK/TSO, UCLA BMD, COSAN, IBM SCIENTIFIC SUBROUTINES, IMSL LIBRARIES)• INSURANCE/HEALTH CARE<ul style="list-style-type: none">— EMPLOYEE BENEFIT (EBS)— GROUP CLAIMS (GCPS)— MEDICARE B CLAIMS— PATIENT SERVICE RECORDS (PSRS)— MEDICAL RECORDS ABSTRACTING• EDUCATION<ul style="list-style-type: none">— ON-LINE EDUCATIONAL SERVICE (AESOP)— ATTENDANCE— CENSUS REPORTING— FINANCIAL ACCOUNTING; PAYROLL— GRADE REPORTING— STUDENT SCHEDULING• SCIENCE AND ENGINEERING<ul style="list-style-type: none">— CHEMICAL PROCESS ENGINEERING— CIVIL ENGINEERING— ELECTRIC POWER ENGINEERING— MATHEMATICS— ELECTRONICS ENGINEERING— NUCLEAR ENGINEERING— STRUCTURAL ENGINEERING— MCAUTO OFFSHORE PROGRAMS— NISEE EARTHQUAKE PROGRAMS— MECHANICAL ENGINEERING (BUILDING, DUCT DESIGN, HEAT TRANSFER, PIPING AND VESSELS)• OTHER<ul style="list-style-type: none">— TELEPHONE INDUSTRY APPLICATIONS— GRAPHICS (VIVADATA, FASTDRAW)— TEXT EDITING (DATA DIALOG)— PROJECT MANAGEMENT— PROGRAM AIDS— COMPUTER OUTPUT MICROFILM

COMPANY HIGHLIGHT/MC DONNELL DOUGLAS AUTOMATION COMPANY
(MCAUTO)

- for a fixed monthly fee of \$3,000 per month. The system will serve as an engineering work station for the construction of two and three dimensional models.
- Two new claims processing systems using Four Phase IV/60's connected to MCAUTO's 370 host system were announced in January 1979. All systems perform data entry functions with some limited local application processing. The claims processing systems will be leased and processing charges will be priced on a transaction basis. Average cost of the systems will range between \$2,000 and \$3,000 per month.
 - Group Claims Reporting System (GCRS), provides editing and claims data; calculation of totals, deductibles and co-insurance; local creation of drafts, draft registers and benefit explanation; and local printing of statistical reports.
 - Workers Compensation (WCTS), provides detailed and summary information on in-house and state claims and accident analysis reports.
 - MCAUTO's Automated Shareholder Records Systems (ASRS) is also available on Four Phase IV/60 equipment. ASRS is an accounting system for shareholder records management which can be used by banks and corporations. The system handles certificate and balance sheet accounting for stock classes, cash dividends and checks, proxy ballots, stock splits, tax reporting, year-end purging and mailing labels.
 - Although not a new product offering, AUTOCOUNTANT, a financial management system which offers host processing for general ledger, accounts payable, fixed assets, account receivable/sales analysis, personnel and payroll is now available on a Four Phase IV/60. MCAUTO currently has 40-50 AUTOCOUNTANT mini-based systems installed.
- MCAUTO is also interested in developing additional application products for computer aided design and manufacturing (CAD/CAM). Development efforts are currently underway to integrate the following products:
 - UNIGRAPHICS, an interactive graphics system, developed to support all phases of the design/manufacturing cycle and currently offered as a turnkey system using Data General System ECLIPSE or DEC 11/70 equipment.
 - CADD (pronounced "caddy") is a high powered computer aided design and drafting system which is used extensively in aircraft design.
 - The Health Services Division (HSD) was established in 1970 when MCAUTO purchased a hospital information system from the Third Order of the Sisters of St. Francis. HSD's current client base is about 900 health care institutions, which generated about \$58 million in revenues in 1978. (Approximately \$9 million of HSD's revenues were derived from equipment sales and reimbursed expenses.) A five year statistical summary of HSD's growth follows:

MCAUTO HEALTH SERVICES DIVISION
STATISTICAL DATA

FISCAL YEAR ITEM	1978	1977	1976	1975	1974
Hospitals Served	449	427	376	315	260
Number of Beds	89,414	88,429	81,000	69,000	55,000

- The major components of MCAUTO's health service applications are:
 - Hospital Financial Control System (HFC).
 - Consists of patient census billing, accounts payable and receivable, payroll and personnel profile, financial statements and reports, property accounting, inventory control, utilization review and medical records.
 - HFC is currently being used by 538 hospitals in 44 states including Alaska and the District of Columbia.
 - Health Data Collection System (HDC).
 - HDC uses intelligent visual display terminals located at nursing stations and in service departments. The terminals are linked to in-hospital minicomputers (DEC PDP/11's) and perform functions for admission, outpatient and emergency registration, order entry and charge collection.
 - HDC has been offered since 1975 and has 43 hospital users.
 - Hospital Patient Care System (HPC).
 - HPC has been offered since 1970 and provides a separate but integrated system for laboratory, admitting, nursing stations, pharmacy, radiology, central supply, outpatient/emergency room and respiratory therapy.
 - Medical Records Information System (MRII).
 - MCAUTO purchased the MRII marketing rights from California Health Data Corporation in 1976. MRII collects, edits, analyzes, and reports medical record statistics for inpatients (MRII/IP), outpatients (MRII/OP), and emergency room (MRII/ER).
 - There are more than 300 users of the MRII system.
 - Physician Data Services (PDS).
 - Provides medical groups with patient accounting and financial management information. PDS has been offered since 1977 and has 70-80 users.
 - Patient History Index (PHI).
 - Offered since 1977, PHI provides access to account status, multiple patient account records and bad debt accounts.

COMPANY HIGHLIGHT/MC DONNELL DOUGLAS AUTOMATION COMPANY (MCAUTO)

- HFC/basic.
 - HFC/basic is designed for use in hospitals with 125 beds or less. It provides patient billing and accounts receivable, payroll, accounts payable and financial statements, and reports and data stat.
- MCAUTO is currently developing two new systems:
 - Patient Care System (PCS) will use a Tandem minicomputer and incorporate all application functions of the HFC, HDC, and HPC systems. PCS will operate on a standalone basis or in conjunction with MCAUTO's network.
 - The new PCS system is targeted to hospitals with 250 beds or more.
 - A basic configuration will be priced at about \$250,000. Fully configured, the system may run as high as \$800,000. Price per patient per day will range from \$5 to \$7.
 - A new time and attendance system is in development and will be offered on Four Phase equipment.

INDUSTRY MARKETS

- MCAUTO's non-captive revenues are derived from the following industry sectors (numbers are approximate):

- Discrete Manufacturing	12%
- Process Manufacturing	3
- Transportation	4 4 <i>stat 13</i>
- Utilities	13 2
- Medical/Hospital	45
- Wholesale	3
- Retail	1
- Government	2
- Services	10
- Insurance	4
- Other	<u>6</u>
	100%

GEOGRAPHIC MARKETS

- The majority of MCAUTO's revenues are derived from the U.S. MCAUTO maintains offices in 66 U.S. cities and in Woking, England and Bonn, West Germany.
- Foreign licensing agreements to market MCAUTO services are held with:
 - Aquitaine Systemes for France, Spain and Portugal.
 - BOC Datasolve for the United Kingdom.
 - DATEMA AB for Sweden, Norway, Denmark and Finland.
 - A special marketing arrangement is also held with Mitsoi Engineering and Shipbuilding in Japan.

COMPUTER HARDWARE

- MCAUTO maintains over 130 computers, of which 37 are on-line, in support of its computer operations. CDC Models 74 and 175 (NOS) and IBM 370 and 303X (OS/MVS) form the nucleus of the equipment used for network services.
- Remote computing services are supplied from two data centers in St. Louis (MO), and centers in Huntington Beach (CA) and Long Beach (CA). Access to the network is through MCAUTOnet, an internally developed data communications network.

Mc Auto

Rec'd from
Dan Post
5/14/79

FREQUENTLY QUOTED STATISTICS

Computer Systems:	137 (37 on-line)	31 Dec 1978
Value of Computers:	\$270,364,306	31 Dec 1978
Five Computer Centers:	Denver Huntington Beach Long Beach St. Louis (2)	
Terminals:	General Commercial 3,294 Health Services 2,378 MDC 3,410 Total 9,082	31 Dec 1978
Personnel:	St. Louis 2,641 West Coast 1,192 All Other 1,076 Total 4,909	31 Dec 1978
Programmers:	St. Louis* 716 HB/LB 410	*all locations except LB/HB
Consultants:	St. Louis* 243 HB/LB 48 Total 1,417	31 Dec 1978
Clients Served:	General Commercial 1,615 Hospitals 781 Clinics, etc. 56 Total 2,452	31 Dec 1978
HSD Financial Processing Clients:	Hospitals 473 Beds 98,140 States (including D.C.) 44	31 Dec 1978
Total Revenue:	\$237,110,428 1977	\$286,775,470 31 Dec 1978
Commercial Revenue:	111,737,343 1977	128,196,330 31 Dec 1978
Issued:	1 Feb 1979	
From:	Information Services K040 STL 84-27538	

(Office Locations: Over)

66 Offices* in:

51 Cities

Atlanta
Baton Rouge
Belleville
Bellevue
Boston (2)
Carson (2)
Cerritos
Charleston
Chicago (4)
Cincinnati
Cleveland (2)
Collinsville
Columbia
Dallas
Dayton
Denver
Detroit
Durham
Falls Church
Florham Park
Hartford
Houston
Huntington Beach
Indianapolis
Irvine
Kansas City, MO
Long Beach (2)
Los Angeles
Miami
Milwaukee
Minneapolis
Nashville
New Orleans
New York (2)
Oklahoma City
Omaha
Palo Alto
Peoria, IL
Philadelphia (2)
Pittsburgh
Portland
Richmond
St. Louis (7)
Sacramento
Salt Lake City
San Francisco
San Jose (Santa Clara)
Seattle
Tulsa
Washington, D.C.
White Plains

27 States

Georgia
Louisiana
Illinois
Washington
Massachusetts
California

West Virginia

Ohio

Missouri

Texas

Colorado

Michigan

North Carolina

Virginia

New Jersey

Connecticut

Indiana

Florida

Wisconsin

Minnesota

Tennessee

New York

Oklahoma

Nebraska

Pennsylvania

Oregon

Utah

31 Dec 1978

*Includes 4 separate United Offices: Boston, Carson (2), St. Louis
plus:
Bonn, Germany (MCAUTO Office)
London, England (Representative)
Middlesex, England (Licensee)
Paris, France (Licensee)
Stockholm, Sweden (Licensee)
Tokyo, Japan (Licensee)

MCAUTO

DATA PROCESSING

Flying high in computer services

Travelers landing at Lambert International Airport in St. Louis get a clear view of the sprawling McDonnell Douglas Corp. complex as well as the large amount of new construction now going on there. But what they cannot see is that virtually all of this construction will house the company's fast-growing computer services subsidiary, not aircraft production. Even as an additional wing of the multimillion-dollar computer center is being rushed to completion, McDonnell Douglas Automation Co. has begun breaking ground for a seven-building headquarters complex budgeted to cost \$73 million.

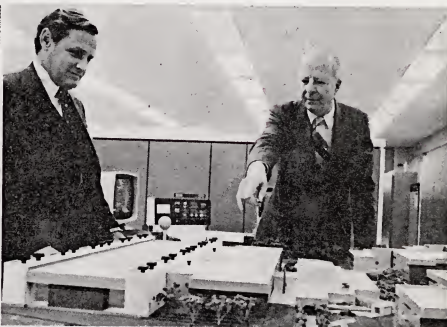
The willingness of McDonnell Douglas to spend that kind of money to grow in a business that in 1978 contributed a paltry 3.1% of its \$4.1 billion revenues is just one thing that sets MCAUTO, as the computer services subsidiary is generally called, apart from the computer service efforts of other aerospace concerns. All of them took advantage of large in-house computer centers to diversify in the early 1970s, when the aircraft and missile business turned sour. But MCAUTO also won from its parent—whose fiscal conservatism is legendary—the commitment and autonomy that few of its competitors enjoy.

And with good reason. MCAUTO was the company's first, and is still its most promising, diversification away from its traditional business. Observers calculate that the subsidiary's net margin is more than double the 3.9% that McDonnell Douglas logged overall last year, and returns on investment and equity could be even more dramatic. Over the last 10 years, MCAUTO sales have grown 32% annually. This year the company is aiming for 28%, and it hopes to sustain a compound growth rate of 20% to 25% well into the mid-1980s.

Big leaguer. McDonnell Douglas began pursuing the computer services business in 1970, when it combined McDonnell Automation Co., Douglas Information Services, and its Astronautics Information Div. into MCAUTO. In the same year, other aerospace company offspring—among them Grumman Data Systems, Boeing Computer Services, and Martin Marietta Data Systems—decided to diversify into what is now the \$8 billion annual business of providing computer time-sharing, consulting, system design, and programming.

Among the aerospace entries, MCAUTO alone has made it to the big leagues. Amassing commercial revenues last year totaling \$128 million, MCAUTO ranks itself eighth among the competitors in computer services. If it counts at cost the work it does for sister subsidiaries, MCAUTO ranks third after computer

Paul W. O'Rourke



MCAUTO's Harman and Orthwein with a model of the new computer services center.

service giants Control Data Corp. and Automatic Data Processing Inc.

"McDonnell Douglas has obviously made a commitment; the other [aerospace companies] just think they have," comments analyst Patience D. Landry, manager of services and software programs at International Data Corp. (IDC) in Waltham, Mass. Much of that commitment undoubtedly stems from the corporate clout of William R. Orthwein Jr., MCAUTO's president. On the board of directors since 1951, he now sits on its executive committee and is the largest nonfamily shareholder there.

'Tightly focused.' Like the other successful vendors of computer services, MCAUTO realized early that specialization was the key to opening new markets. "We're continually sampling products in other markets, but most end up as discards," says Executive Vice-President Robert L. Harman. "We're more interested in tacking products onto the lines we're now in." Adds an admiring competitor:

"MCAUTO is very tightly focused on all their businesses. They'll sell any kind of computer power as long as it ties to one of their application packages."

Like the other aerospace companies, MCAUTO has relied on its sister subsidiaries for its library of complex science and engineering programs. The company has also tried to translate the aerospace industry's renowned automated manufacturing techniques into software pack-

ages that can be rented to other manufacturing companies.

MCAUTO's fastest-growing specialty, however, is selling computer services to hospitals, a market that accounted for 46% of its revenues last year, and a market that it—along with Shared Medical Systems Corp. in King of Prussia, Pa.—dominates. "The company has proved its ability to understand the hospital market, to get a product on the market before most hospitals know they need it," says Walter P. Smith, director of computer service programs at Input Inc. in Palo Alto, Calif.

Because most hospitals have no data-processing capabilities of their own, "our health services division should continue to outperform the rest of our business," says Harman. MCAUTO recently added a billing service for physicians, a service that many hospitals want to provide for doctors to ensure a continuing stream of patients. "Frankly," Harman says, "it doesn't take a lot of new government



controls to add another dimension to our health services business."

MCAUTO has strived to carve out other niches, but none has succeeded like health services. "MCAUTO's problem is that it's never found another hospital market," says analyst Nancy C. Scull of MIT. "But I think it has the beginnings of a general." One could be the telecommunications market. A quick glance at a list of MCAUTO's top 20 customers reveals the telephone operating companies that use software and processing for managing their operator work force.

Attractive candidate. But a more likely candidate is its growing list of programs for the insurance business. "Unquestionably, third-party claims processing is the most attractive activity for them to pursue," says consultant Donald C. Aronson, director of computer services programs at Quantum Science Corp. "They already know the hospital market; they're already in there dealing with the needed material."

Nevertheless, MCAUTO's management style echoes its parent's conservatism, and that has had its drawbacks. "It may be the most aggressive of the aerospace companies, but its lack of aggression is its biggest negative," one critic charges. He notes that, while MCAUTO was a pioneer in developing sophisticated network facilities, it was slow to exploit them. Teleprocessing now accounts for 63% of the company's commercial revenues; total processing sales add up to 75%, with consulting, system design, and programming making up the rest.

Despite MCAUTO's track record, its 14% growth last year missed its 20% target by a wide margin. Word got out that MCAUTO planned to introduce a new distributed-health-care system this year, "and we didn't sell much of what we had," Orthwein explains. The company also had problems absorbing United Computing Corp., a 1976 acquisition that markets stand-alone, minicomputer-based manufacturing systems. This has now been folded into MCAUTO's manufacturing services arm.

Orthwein no longer counts such acquisitions toward his 20% growth goal, though he grants that MCAUTO is always looking for new products. "We're not interested in smaller data-processing centers or service bureau operations," he says, "but we might buy a small company to get a software product we want."

Companies that manufacture hardware are no longer of any interest. Earlier, MCAUTO, and then its parent,

tried to acquire Data 100 Corp., but both were soundly rebuffed when the Minneapolis terminal maker chose Northern Telecom Ltd. instead. While McDonnell Douglas may still be thirsting for a computer equipment maker, "MCAUTO will remain in the service business," Orthwein says.

On-site power. But although MCAUTO has turned its back on manufacturing, Orthwein acknowledges that "more and more we're going to have to render services that include minicomputers, terminals, and controllers"—hardware that, he says, MCAUTO will sell or lease as required. For, like the rest of the computer services business, MCAUTO is being forced into so-called distributed

data processing, in which customers install more and more computer power on site to do local processing as well as to link into central networks.

The trend has given the industry fits (BW—Mar. 27, 1978), but MCAUTO seems to have a head start. Four years ago it started distributing on-site computer power to its hospital clients, and it has since added four general-business packages for other customers. "The equipment people are all out selling distributed processing, and none of them has the capability to pull it all together," says Marketing Vice-President William R. Vickroy. "Making distributed processing viable and real provides a major area of expansion for MCAUTO in the '80s." ■

Companies MCAUTO has left in the dust

The list of the other companies that plunged into the computer services business at the same time as McDonnell Douglas Corp. reads like an aerospace Who's Who: Boeing, Grumman, Lockheed, and Martin Marietta. None, however, has pulled it off with the panache of McDonnell Douglas Automation Co. (MCAUTO).

Perhaps the closest is Martin Marietta Data Systems Div. Ordered by its corporate management in 1970 to turn a profit in three years or get out of the commercial business, the group not only made it but also is now the leader in the fast-growing market for manufacturing software. The group's annual revenues are an estimated \$60 million, some 40% of which is software sales, with the remainder in processing time.

At Boeing Computer Services Co. (BCS) and Grumman Data Systems Corp., "the first loyalty is to the parent," according to Donald C. Aronson of Quantum Science Corp. "Sure, they've parlayed internal strengths into commercial packages, but they've never had the autonomy in the organizational structure like MCAUTO and Martin Marietta." Grumman figures its commercial sales at \$32 million; Boeing has never reported BCS revenues, but observers say its commercial business totals around \$50 million.

More specialization. Grumman has grown by putting together a lot of little pieces of business. Officials say that it "specializes" in no fewer than 12 differ-

ent areas, including instrumentation and systems for telephone operations. The company's efforts are now directed toward consolidation. Says Grumman Data Systems President Robert A. Nafis: "We're trying to chew what we've already bitten off."

Like Grumman, Boeing initially took a backshot approach to the computer services market. Now "we're trying to specialize more and more in the things we're good at," says Robert W. Tharington, president of BCS. "We've learned the hard way that we don't go out into the marketplace with a product until we've done extensive market research." One such specialty is a business-oriented time-sharing service.

Lockheed Corp. differs from the other aerospace companies in its approach to the business. Instead of centralizing its marketing of commercial computer services, it allows each of its subsidiaries to sell the products it chooses. Lockheed Missiles & Space Co., for example, has become a leader in the as-yet-small bibliographic retrieval business with its \$6 million Dialog service.

The aerospace-spawned computer service companies are not lacking in brute computer power or programming expertise. But they lack either the commitment from their parent companies needed to exploit the commercial marketplace or the single-mindedness required for success in the services market. "It takes a helluva lot of courage to turn down multimillion-dollar custom jobs," says Robert E. Burns, vice-president at Martin Marietta Data Systems. "But sometimes that's what it takes to stay narrowly focused."



COMPANY MCAUTOFY 12/31

FISCAL YEAR	ANNUAL REVENUE (\$millions)	ANNUAL GROWTH RATE (%)	COMMENTS
1971	54 TOTAL		
1972			
1973	83 121		
1974	45 140		
1975	56 164		
1976	77 190		4/1/76: acquired United Computing Corp.
1977	112 237	ACTUALS not estimated	
1978	128 287	<input type="text"/> %	Previous years Average
	<input type="text"/>	<input type="text"/> %	1977-1978
		<input type="text"/> <input type="text"/>	Max Rate Projected Min Rate Projected
1979	Max Revenue	Min Revenue	Avg. Revenue
1980			
1981			
1982			
1983			



[illegible]

At Pease (client)

COMPANY HIGHLIGHT

MCDONNELL DOUGLAS AUTOMATION CO.
Box 516
St. Louis, MO 63166
(314) 232-0232

W. R. Orthwein Jr., President
Division of McDonnell Douglas Corp.
Total employees: 4,000 approximately
Total company sales, fiscal year
end 12/31/76: \$190.2 million

12/31/77: 237.1m
Comm 111.7m
hosp 53.0m

THE COMPANY

- McDonnell Douglas Automation (MCAUTO[®]), established in 1960, provides data entry, data processing, facilities management, consulting, systems analysis and design, and programming and training services.
- Total company revenues increased from \$163.5 million in 1975 to \$190.2 million in 1976, a 16% growth. The commercial business of the company increased 38% during the same period, from \$55.5 million to \$76.8 million. First six months of 1977 commercial sales were \$52.022 million, indicating that this growth will probably be maintained in 1977.
- MCAUTO has an excellent reputation among engineering and architectural firms for providing complex design and project management tools utilizing proprietary structural design and online interactive graphics systems.

KEY PRODUCTS AND SERVICES

- Eighty-five percent of the revenues are derived from processing services - approximately two thirds from batch, and remote batch - the rest from interactive and inquiry services as well as from professional services, software products and turnkey systems.
- Almost 50% of MCAUTO's employees are located in St. Louis and 27% are on the West Coast. Of the total work force of almost 4,000 (1Q77), 24% are classified as programmers, 6% as consultants, 21% marketing, 10% administrative, and others in operations.
- The Hospital Services Division has been one of the fastest growing groups since its acquisition in April 1970. Although the growth-rate of new hospitals has slowed, MCAUTO is now offering additional online services to increase its revenues per hospital bed. To combat the potential threat of minicomputers, the company offers a DEC

August 1977

COMPANY HIGHLIGHT/MCDONNELL DOUGLAS AUTOMATION COMPANY

minicomputer system as part of the services offered. The hospital group's revenues increased 52% in 1976 over 1975.

- Manufacturing and numerical control services are another area of specialization for MCAUTO. In addition to computer-aided design and the computer-aided manufacturing (CAD/CAM) systems utilizing several IBM mainframes and alphanumeric and graphic CRT terminals, MCAUTO offers turnkey numeric control (UNIAPT) and interactive graphics (UNIGRAPHICS) systems through its United Computing Corporation subsidiary in Carson, CA.
- In addition to the above systems, MCAUTO provides an integrated manufacturing system, a proprietary system for Bell Companies, an integrated financial system, and online data collection services.

APPLICATIONS Approximately 50% of MCAUTO revenues are derived from applications for the medical/hospital industry. The remaining revenues are from general business, scientific and engineering, utility, and other applications.

INDUSTRY MARKETS Approximately half of MCAUTO revenues are derived from the medical industry, while the remaining 50% are derived from the services industry, manufacturing/distribution, utilities, insurance, education.

GEOGRAPHIC MARKETS More than three fourths of MCAUTO revenues are derived from the Central and Eastern states; the Pacific Coast region and international sales provide the remainder.

COMPUTER HARDWARE AND SOFTWARE

- MCAUTO Operates 99 mainframes in six computer centers located in Denver, CO; Huntington Beach and Long Beach, CA; Peoria, IL; and two in St. Louis, MO.
- As of the first quarter of 1977, 5070 terminals were online to these computer centers. Forty-three percent of these terminals were used in general business applications, 24% in hospital services, and 33% inside McDonnell Douglas Corporation.
- The computer center equipment includes IBM 370/168 and CDC 6600 mainframes. MCAUTO is currently evaluating the latest generation IBM equipment.

COMPANY PROFILE

MCDONNELL DOUGLAS SYSTEMS INTEGRATION COMPANY

325 McDonnell Boulevard
Hazelwood, MO 63042
(314) 232-0232

F. Mark Kuhlmann, President & General
Manager
Operating Unit of McDonnell Douglas
Corporation
Total Employees: 2,000
Total Revenue, Fiscal Year End
12/31/89: \$290,000,000*

*Pro forma

The Company

McDonnell Douglas Systems Integration Company (MDSIC) is the remaining U.S.-based information services business of the former McDonnell Douglas Information Systems Company.

The Information Systems Company was officially dissolved January 1, 1990, and several of its units were divested, put up for sale, or are in the process of being spun off.

- In March 1989, the Health Systems Company was sold to Systems Associates, a unit of American Express. During 1988, Vitek Systems, a part of the Health Systems Company, was sold to a management-led investor group.
- In November 1989, the Network Systems Company—including the TYMNET public data network, credit card authorization services, electronic data interchange (EDI) and electronic mail services—was sold to British Telecommunications, plc, for \$355 million in cash.
- The Computer Systems Company and McDonnell Douglas Information Systems International are being combined into a single U.K.-based entity.
- MDSIC's TeleCheck check authorization services have been discontinued and are currently for sale.

MDSIC currently provides systems integration and professional services, application software products, and processing services.

- The company is now a more focused business, primarily offering engineering-based products and services to manufacturing, telecommunications, state and local government, insurance, federal government, computer-aided software engineering, remote computing, and built environment

technologies (architects, engineers, and constructors, and infrastructure life cycle management).

- The company's strengths are based on its ability to capitalize on McDonnell Douglas Corporation's skills and experience in engineering and manufacturing, as well as its long-term relationships with a number of key accounts in its chosen markets.

MDSIC had estimated 1989 noncaptive revenue of \$290 million and is operating profitably, with pretax margins of about 7%. The company also derives revenue (under \$15 million) from products and services provided to McDonnell Douglas Corporation.

MDSIC's current organization includes the following divisions:

- The Manufacturing & Engineering Division, headquartered in St. Louis, provides the UNIGRAPHICS[®] software product and associated support services to the discrete manufacturing industry, with focus on the aerospace and automotive segments.
- The Built Environment Technologies Division, headquartered in St. Louis, provides the Graphics Design System (GDS) software product and systems integration services to the architectural, engineering, and construction (AEC) market, and to the infrastructure market in state and local government.
- The Communications Industry Systems Division, headquartered in Englewood (CO), provides systems integration and professional services to telecommunications companies, including AT&T, the Bell operating companies, and independents.
- The Insurance Division, headquartered in St. Louis, provides processing and professional services to insurance carriers, third-party administrators, and self-insured companies, primarily in the area of claims handling and reinsurance.
- The Federal Systems Division, headquartered in Vienna (VA), provides systems integration services to agencies of the federal government.
- The Information Systems Engineering Division, headquartered in St. Louis, provides computer-aided software engineering (CASE) tools and associated training, education, and consulting professional services.

- The Professional Services Division, headquartered in St. Louis, provides contract programming, both through projects of other MDSIC divisions and directly to commercial customers.
- The Commercial & Remote Computing Services Division, headquartered in St. Louis, provides processing support and outsourcing services to clients in various industries.

Key Products and Services

INPUT estimates MDSIC's 1989 revenue was derived approximately as follows:

Systems integration	72%
Software products	13%
Processing services	7%
Professional services	6%
Systems operations	<u>2%</u>
	100%

In the systems integration area, MDSIC's core strength is its ability to develop engineering-rich, complex systems, using established products and services offered through MDSIC's various divisions.

- MDSIC's strategy is to tailor solutions to targeted niches in partnership with clients to whom it can bring proven core products and business understanding. Target niches include:
 - Manufacturing companies
 - AEC and public sector units with infrastructure (geographic information systems) system needs, such as transportation and environmental agencies
 - Telephone companies
 - Insurance companies
 - Federal customers
- MDSIC has long-term marketing arrangements with most major hardware vendors (e.g. DEC, IBM, HP/Apollo, Sun), as well as with selected software vendors of generalized products, such as Oracle. MDSIC will team on bids with hardware vendors, accounting firms, and other systems integrators when required and will subcontract where special skills are required.
- MDSIC has been a preferred vendor of General Motors/EDS since 1988, working to standardize CAD/CAM systems within General Motors.
- Since the beginning of 1988, MDSIC has worked on three federal and 15 commercial systems integration products. The

federal projects have been under \$10 million, while the others have average \$5 to \$20 million.

- Selected projects include:
 - Geographic information systems for Maine's Department of Transportation, the Long Beach Port Authority, the Atlanta Area Rapid Transit Authority, and Washington State's Department of Transportation.
 - Total engineering and asset management systems for Pacific Telesis and Southwestern Bell
 - Highway/tunnel alignment engineering design for the state of Massachusetts
 - Integration of UNIGRAPHICS and other products into existing manufacturing systems for Ingersoll Rand
 - State environmental agency office integration services for Massachusetts and Pennsylvania

The UNIGRAPHICS family of interactive, three-dimensional CAD/CAM/CAE software products are targeted to aerospace, automotive, consumer products, and general machinery/equipment manufacturers.

- Applications supported include solid modeling, sheet metal fabrication, printed circuit board design, finite element modeling, mechanism linkage design, graphics machining, simulation, robotics, plant communications systems, numerical control tape preparation, and quality assurance.
- UNIGRAPHICS runs on DEC VAX, Data General, Tektronix, and Hewlett-Packard platforms.
 - In April 1990, MDSIC and Hewlett-Packard signed a three-year, \$75 million value-added reseller agreement allowing MDSIC to resell HP's Motorola and family of RISC-based 9000 workstations with MDSIC's UNIGRAPHICS software.
- UNIGRAPHICS is used by over 1,000 companies in the U.S.
 - In August 1990, McDonnell Douglas Corporation announced that it had chosen UNIGRAPHICS as its standard mechanical CAD/CAM/CAE system as a foundation for creating a seamless line of communication among its design, engineering, and manufacturing operations. Over 160

UNIGRAPHICS systems, supporting over 1,100 users, are already in use at McDonnell Douglas.

- Other major UNIGRAPHICS customers include Navistar International Transportation Corporation, Fruehauf Corporation, Crown Equipment Corporation, and Pratt & Whitney.
- INFOMANAGER, available as an add-on to UNIGRAPHICS, is a product data management system for manufacturers that supports information sharing for and during the design/production of their products.

The Graphics Design System (GDS) is CAD/CAE software that supports architectural design and drafting, civil engineering, structural engineering, and mapping applications.

- GDS is a base product used in conjunction with MDSIC's systems integration activities to develop geographic information systems that manage the infrastructure, from planning, designing, and construction, through operations and maintenance.
- MDSIC markets GDS and associated services to AEC firms and state and local governments, using its expertise in transportation, utilities, land records, facilities, water resources, and environmental protection applications.

MDSIC provides software, processing, and systems integration services to the telecommunications industry in the following areas:

- Network engineering and asset management: Inside plant and real estate, outside plant, and records conversion systems and services
- Customer service operations: Provisioning, bill generation and distribution, and network enhanced services
- Administrative information services: Operator force management and resource management and purchasing

Insurance-related processing services provided by MDSIC support group and property claims processing and reporting, patient service records, Medicare claims processing, and workmen's compensation.

- Clients include the major Blue Cross and Blue Shield companies and may smaller independent health and property and casualty insurance companies.

CASE products and services, generally used to support MDSIC projects, include the following:

- Application development tools include PRO-IV^R, a fourth-generation language and STRADIS^R, a fourth-generation systems development tool.
- MDSIC also provides on-site consulting, education and training, and public seminars.

Contract programming and system development professional services are provided by a staff of over 300 professionals from offices in Northern New Jersey, Chicago, St. Louis, Denver, and Cypress (CA).

- Clients include Anheuser-Busch, AT&T, Mazda, McDonnell Douglas, Sears, Southwestern Bell, Transamerica, Union Pacific, the U.S. Army, and Waste Management.

Outsourcing contracts include the following:

- In April 1989, MDSIC was awarded a five-year, \$25 million outsourcing contract by The Trane Co. to provide business, financial, and manufacturing data processing previously performed at Trane's three on-site data centers.
- MDSIC also provides outsource processing for Purina Mills, Gallagher Bassett, Lloyds Bank, and Sterling Chemical.

Industry Markets

MDSIC's revenue is derived primarily from clients in manufacturing; telecommunications; insurance; federal, state, and local government; and AEC markets. INPUT estimates MDSIC's 1989 pro forma revenue was derived as follows:

Discrete manufacturing	45%
Government	20%
Insurance	10%
Telecommunications	10%
Business services	7%
Other	8%
	100%

**Geographic
Markets**

Virtually all of MDSIC's revenue is derived from the U.S.

International sales of MDSIC products are handled by McDonnell Douglas Information Systems International (MDISI) and are reported with MDISI revenue.

Major MDSIC offices are located in St. Louis, Cypress (CA), and Englewood (CO). There are also sales offices in 19 other states and in Canada.

Research and development operations are located in Cambridge, U.K.

**Computer
Hardware**

MDSIC's processing services are supported by data centers in St. Louis, with IBM and DEC computers installed.

